hygeia

The Health Magazine of the American Medical Association

CHEST X-RAYS, by J. Arthur Myers, M.D., and Virginia L. Dustin; TESTING INTELLIGENCE AND APTITUDES, By L. L. Thurstone, Ph.D.

ANUARY 1945 25c

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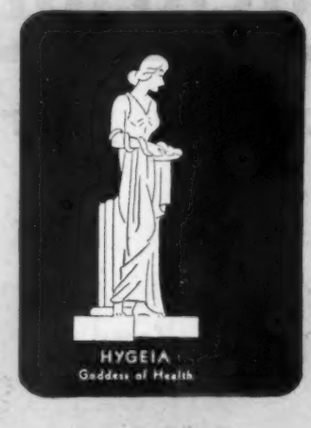
FORECAST



SCIENCE TRIUMPHS OVER THE LOST CORD

By Zoe Reeves

Cancer or tuberculosis of the larynx or accidental injury sometimes results tragically in the loss or partial loss of the vocal cords. In the past, many victims of these conditions have remained pitifully isolated from communication with their fellow beings. But Miss Reeves' article, which explains how the "voice box" works, offers hope in the form of a new artificial aid to speech.

MEDICAL SOCIAL SERVICE

By E. M. Bluestone, M.D.

The medical social worker stands between the poor patient and his poverty, helping to build needed permanency into results of the medical aid given at clinic or hospital. Now a regular department in most approved hospitals, medical social service is generally unknown to hospital patients who pay their own way. Dr. Bluestone tells about this important work in next month's HYGEIA.

YOUR AMINO ACID QUOTA

By Miriam Zeller Gross

Essential ingredients of body-building proteins, the amino acids may soon rank with vitamins in the public consciousness. What these vital substances are, where they are found and what functions they perform in the body are told in another of Mrs. Gross' nutrition articles.

MEDICAL CARE INSURANCE

By Gordon B. Duncan

In a number of communities throughout the country "medical care insurance" is offered as an aid to the family budget. Mr. Duncan explains how the insurance programs sponsored by state and county medical societies have developed in the past few years, and how they operate.

hygeia

THE HEALTH MAGAZINE

535 N. DEARBORN ST., CHICAGO 10, ILL.

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Vol. 23 **No. 1**

THE FIGHT AGAINST MALARIA

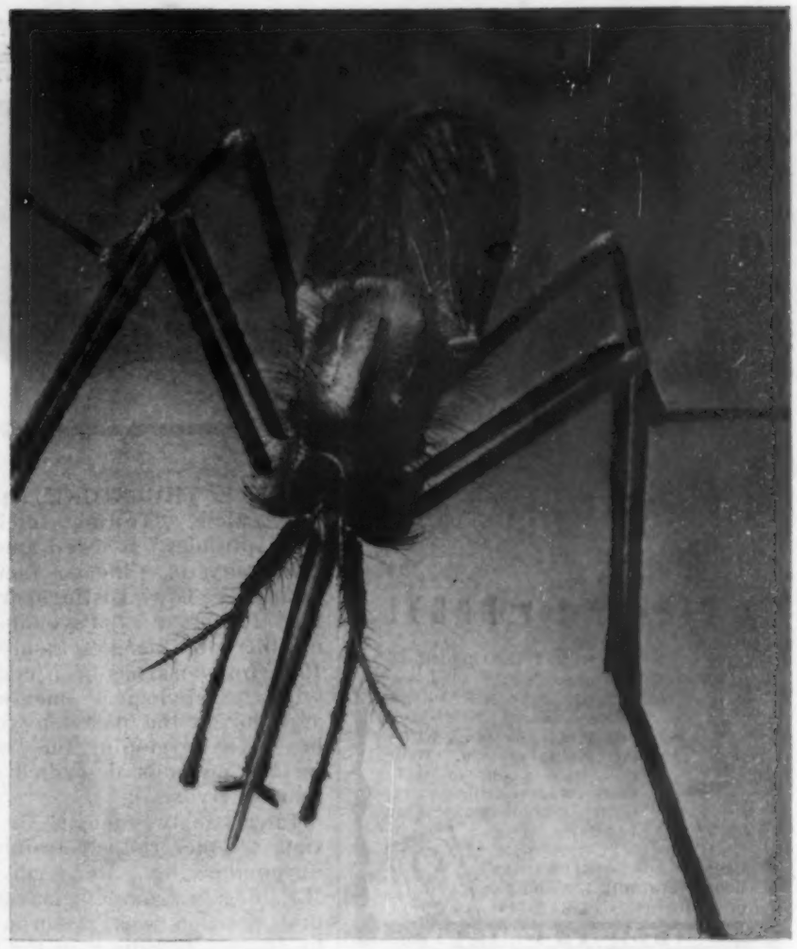
War kills by thousands. Disease kills by millions. This year, for example, malaria will kill a million people in India alone.

In this war yellow fever has been curbed. Typhus can be prevented. Bubonic plague and cholera are controllable. Malaria remains.

Into the fight, America has thrown physicians, chemists, engineers, entomologists and medical scientists to wage the greatest mass medical attack ever organized.

Useful synthetic drugs that lessen the severity of malaria are already available. Quinine has at last been made synthetically. But the hunt continues for substances that will prevent malaria.

At the Squibb Laboratories hundreds of drugs already have been tested in this search for better anti-malarials. The search continues in cooperation with government and scientific agencies. Thus Squibb research seeks weapons to defeat disease and suffering—not alone for now, but for all time.



Malaria parasites are transmitted from one person to another by certain species of mosquito. Primary malaria control, therefore, is to wipe out mosquito breeding places. One example of the effectiveness of military malaria control: A division advancing into malarial territory reported 6,000 cases in two months. After suitable control measures, another division occupying this area reported only 600 cases in two months.

Malaria danger zones. Black areas mark zones of greatest prevalence, darkly shaded areas mark moderate prevalence, and lightly shaded areas mark low prevalence. As you can see, malaria exists around the world.

In the Squibb Laboratories, scientists have worked unceasingly, developing and testing drugs to defeat the malaria parasite. The goal in malaria research is twofold: (1) to develop an effective treatment; and (2) to provide a preventive agent. Squibb research continues on many fronts, to help bring a healthier tomorrow.

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WHO'S WHO IN hygeia

DR. L. L. THURSTONE, author of the article, "Testing Intelligence and Aptitudes," is listed among the University of Chicago faculty as Charles F. Grey Distinguished Service Professor of Psychology. A member of Chicago's faculty since 1924, his work has been concerned with psychological measurement and during the past ten years he has been developing the "multiple factor" methods described in this issue of HYGEIA.

Interestingly enough, Dr. Thurstone's undergraduate training was in engineering. He received the M.E. degree from Cornell, and his first position was as an assistant to Thomas E. Edison in the famous laboratory at Menlo Park. Later he took his degree of doctor of philosophy from the University of Chicago and was professor of psychology at the Carnegie Institute. Professor Thurstone was the author of trade tests for occupational classification of service men during the first World War, and during the present war he has been a member of the committee on classification of military personnel, connected with the office of the Adjutant General.

The manuscript for the article appearing in this month's HYGEIA was adapted by Dr. Thurstone from an address which he presented a few months ago.

DR. ROGER I. LEE, who wrote the article called "Are Doctors People?" is president-elect of the American Medical Association, having been summoned to that position by a unanimous vote of the House of Delegates. He has for many years been a leader in education, in public health, and in the practice of medicine, both in his home state of Massachusetts and throughout the nation. Thus he is eminently well qualified to answer the question he asks.

Well known to readers of HYGEIA because of many articles on diseases of the chest which have appeared in these pages are DR. J. ARTHUR MYERS and VIRGINIA L. DUSTIN. Dr. Myers is professor of preventive medicine and public health at the University of Minnesota medical school and a member of the executive committee of the Minnesota Public Health Association. He has helped in the fight against tuberculosis and toward the improvement of public health methods by contributing more than four hundred articles on public health to medical, nursing and educational journals. He averages two hundred lectures a year on the subject of chest and lung diseases. Miss Dustin, who collaborated with Dr. Myers in writing the article, "The Use of X-Ray in Diseases of the Chest," as well as many others, is also a Minnesotan and a graduate of the University of Minnesota.

Dr. Charles L. Lowman of Los Angeles and Dr. H. G. Bull of Ithaca, N. Y., are both specialists. Dr. Lowman, author of the article on infantile paralysis victims, specializes in orthopedic surgery, and the major field of Dr. Bull, who calls parent and doctor allies, is pediatrics.

LETTERS FROM READERS

Reader in Uruguay

To the Editor:

It was with great interest that I read the July issue of HYGEIA, particularly the article by Richard Charleton on "Cancer Teaching in Schools." In another country than the United States, we are constantly reminded of the difference in attitude in public health education and service. Doctors and laboratory men are excellent here in their ability and intelligence—but this

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CAN YOU PASS A MAIL BOX WITH A CLEAR CONSCIENCE?

Just suppose that instead of this mail box you came face-to-face with the boy in uniform you've neglected to write! . . . After all, writing a letter is such a *little* thing to do . . . and yet to those in the Service it is the most important thing in the world. From the Southwest Pacific, a Dole employee who is now in the Service writes as follows —

"Mail is a great thing. It is a barometer on a ship. When we don't have mail for long periods, the morale becomes very low . . . but just as soon as mail is brought aboard, the entire ship brightens and the change in atmosphere is certainly surprising."

Even if you have no one of your own in the Armed Forces, drop a a cheery line to a neighbor's son or daughter, a former business associate, or, perhaps, one of the servicemen you've entertained in your home.

TO SPEED YOUR LETTERS AND TO SAVE VALUABLE SHIPPING SPACE, USE V-MAIL

business of "preventive medicine" whether it be through practice or theory, is sadly missing.

This article on a program of cancer education in the schools reminds me again of the earnestness of medical men in the States to seek prevention or at least teach the public to attend to symptoms early. Doctors at home in the States do not hesitate to let their patients know as much as possible about the ailment and its treatment. Down here we are told "Just don't worry."

There are a number of Uruguayan friends speaking English who enjoy your magazine when it comes. MRS. J. T. LEGG

Montevideo, Uruguay

Human Science Class

To the Editor:

I wish to order forty copies of HYGEIA from September through June to be used in our Human Science classes at Southwest High School. We find the information so interesting and so up to date that we feel HYGEIA is a "must" in our course. JANE JOYCE, Instructor

Kansas City, Mo.

Finest

To the Editor:

I want you to know that I regard HYGEIA as the finest and most helpful magazine of its kind that I have ever read. ANNA BOKOSKE

Crawford, N. J.

Dislikes Downtalk

To the Editor:

Please take me off your mailing list. I was much disappointed in your September issue and hope that that is not an example of what you serve the people under the endorsement of the A. M. A. I was acquainted with your magazine years ago and either it was better then or I'm mature now. I have no objection to being educated, but dislike to spend my small time for reading being "talked down" to. The article on teeth was particularly wasteful of my time.

MRS. THOMAS WESTON BROWN

Framingham Centre, Mass.

Can't Miss

To the Editor:

I have taken HYGEIA for two years and can't do without it. I have already paid our subscription through a special club group, so please continue to send your fine magazine. I simply can't miss an issue. MRS. ZONA V. MILHON

Stilesville, Ind.

NOBODY KNOWS...

the trouble he's seen

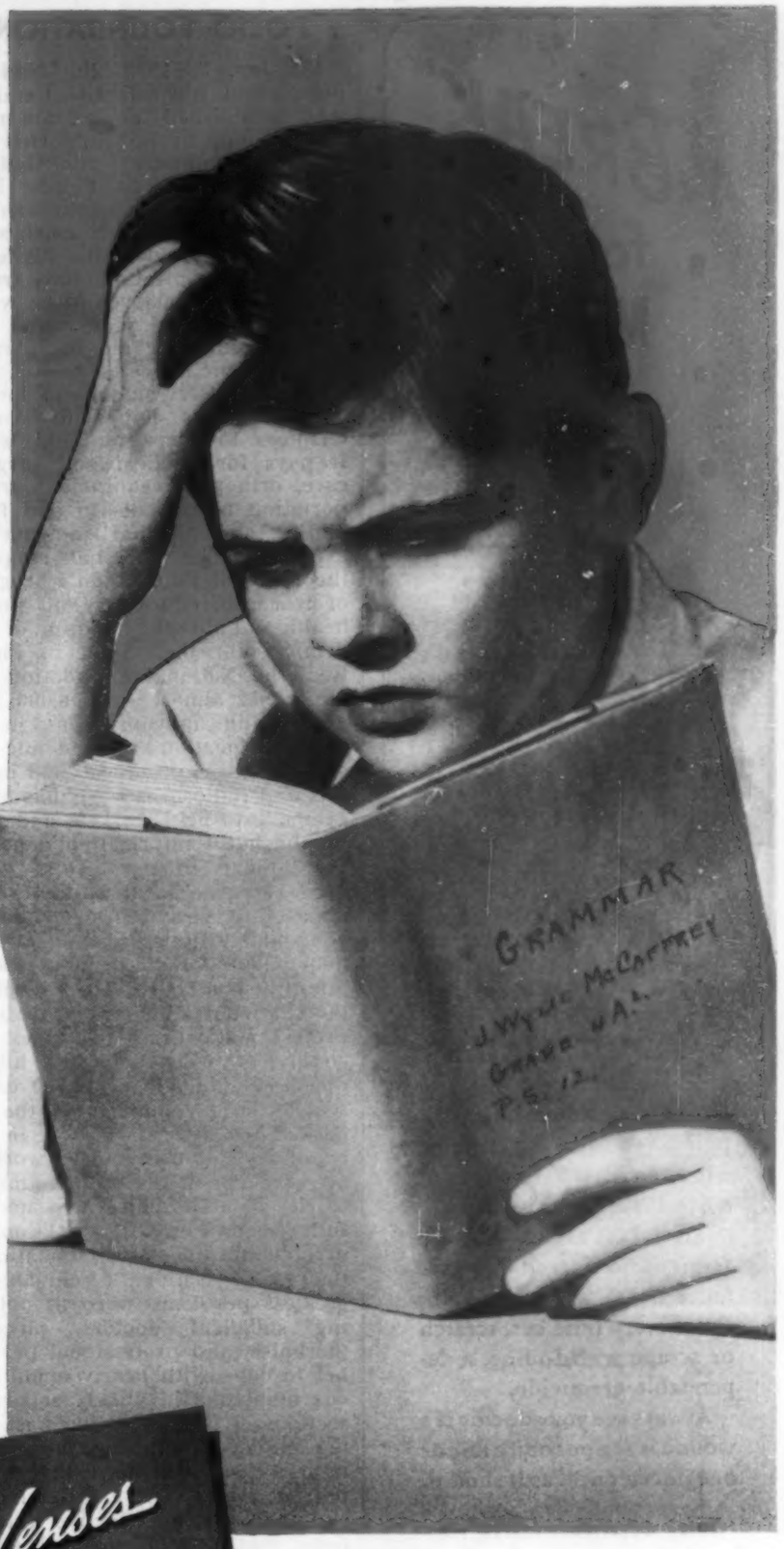
★

Nobody knows the loneliness of a little boy who can't keep up with jibing schoolmates. Nobody knows his frustration at lessons he can't grasp, at games that make him seem hopelessly awkward.

Nobody knows about the shadowy gray, puzzling world some children take for granted.

Nobody knows—because children themselves don't know that it's wrong not to see *right!* Like mist on a window, poor vision clouds the eager young mind, dims the bright personality.

But *you* know that good vision is an asset too precious to be risked...that poor eyesight is a handicap even for the brightest child. You may not suspect that *your* child's eyes may be holding him back. There's one way to be sure they're not: Have your child's eyes examined *regularly!*



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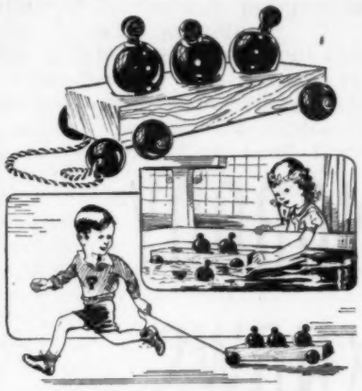
POLIO FOUNDATION

On Jan. 3, 1938, the National Foundation for Infantile Paralysis was established as a non-profit corporation, to be supported entirely by voluntary contributions from the public. Funds have been raised each year through the "March of Dimes" in celebration of President Roosevelt's birthday, and the organization has grown until today 50,000 volunteer workers carry on the year round service of rendering aid to infantile paralysis victims.

Half the total amount of money contributed is left with county chapters to carry on field work. It pays for medical and surgical care, orthopedic equipment, transportation of patients to and from clinics, and hospital and nursing expenses. The other half supports the National Foundation's program of research, education and public health and aids the handling of epidemic outbreaks. Since its inception, the National Foundation has allocated almost $7,000,000 for grants and appropriations in research, education and epidemic aid, and by means of educational bulletins and radio broadcasts has made available to field workers and public the latest information concerning poliomyelitis.

In response to the fund-raising appeal last year 50,000,000 people contributed dimes and dollars to help carry on the fight against infantile paralysis. These enabled the National Foundation to send professional workers, supplies and equipment to areas hardest hit by the 1944 epidemic of 18,000 cases, second largest number in the recorded history of the disease in this country. But many more workers are needed if the Foundation is to carry out its objectives successfully, according to Basil O'Connor, president, who states emphatically that "the National Foundation's greatest problems were in obtaining sufficient doctors, physical therapists and professional personnel to cope with nearly simultaneous outbreaks in widely separated sections of the South, the East and the Middle West. Many more technicians are still needed for this present fight. The greatest handicap in rendering effective aid has been the lack of physical therapists." The Foundation has sponsored scholarships in accredited schools of physical therapy and made them available to graduate nurses, graduates in physical education or those with a minimum of two years undergraduate college work with science courses.



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Your doctor

Painted by Waldo Peirce

The Upjohn Company is privileged to be associated in the production for the armed forces of penicillin, sulfonamides, and a form of blood plasma known as Normal Serum Albumin (Human) Concentrated. Because this form of plasma is compact and easily transported, it is used on landing craft, submarines, and in crowded bombers—wherever space means life.

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Our new brochure, "Baby Coming?" will give you the interesting details of this really wonderful garment. Your copy and the name of your local corsetiere will be mailed promptly . . . just send your name and address on a card or use the coupon below.

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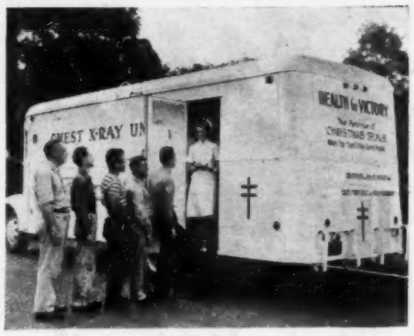
"K.O. TB" IS NEW HEALTH EDUCATION FILM

In cooperation with the National Tuberculosis Association, the Zurich Insurance Companies are presenting a slide film explaining the public good accruing from the purchase of Tuberculosis Christmas Seals.

"K.O. TB," as the film is called, is the story of a champion boxer who is a consistent winner until tuberculosis knocks him out. An explanation of his cure completes the story, in which is contained the knowledge people should possess to knock out tuberculosis in their own communities. In addition to the regular showing of "K.O. TB" in plants where the Zurich safety program is in operation, the company has made the film available to local tuberculosis societies, public health departments, and other organizations interested in health education.



Scene from "K.O. TB" shows mobile unit used for taking chest x-rays

PUBLIC HEALTH NURSING DAY

On January 26th the country will celebrate the first National Public Health Nursing Day, observing the theme of "Know Your Public Health Nurse—Who She Is, What She Does." The theme was chosen by the National Public Health Nursing Day committee partly because the results of a poll taken recently in several cities and towns indicated that few people had any idea of the function or scope of the public health nurse. The people interviewed regarded her as just a nurse who drives around in the county car and takes kids to clinics, or who gives nursing care to sick people who are too poor to go to hospitals. Many of them had never heard of the public health nurse. It is the desire of the committee to spotlight several points for emphasis: that the visiting nurse, district nurse, city or county nurse, school nurse and industrial nurse are *all* public health nurses; that the public health nurse is a registered, graduate nurse expected to have special preparation for teaching health; and that public health nursing service has a thorough preventive and educational, as well as remedial, side.

The National Organization for Public Health Nursing feels that the results of intensive and large-scale physical examinations, part of the pre-induction program of the armed forces, have pointed up the value of adequate public health nursing services for every community throughout the nation, and they hope that the "Day" will furnish impetus for a survey of community needs, the introduction of new types of needed service, and the recruitment of more graduate nurses into the public health field.

HEALTH EDUCATION AWARD

At the fourth annual luncheon of the Cleveland Health Museum recently, the first Elizabeth S. Prentiss National Award in Health Education was presented to Evart Grant and Mary Swain Routzahn by the board of trustees of the museum. Mr. and Mrs. Routzahn were selected as recipients of the award by a nominating committee headed by Dr. W. W. Bauer, Director of the American Medical Association's Bureau of Health Education, because of their outstanding contribution to health education.

The purpose of the Health Museum is "to carry the light of knowledge into the darkness of fear and ignorance," and the trophy, executed by Joseph M. Motto, symbolizes this purpose. It shows the serpent, ancient symbol of healing, entwined around the flaming torch of knowledge. Since the most notable work of the Routzahns has been in the field of health education publicity, such a symbol seemed to the committee to be particularly appropriate for them. The National Publicity Council for Health and Welfare Services was one of their major achievements, having its roots in a Routzahn publicity committee set up in 1922. Some of their other activities included the founding of the Health Education Section of the American Public Health Association, and the initiation of a course

THE RUSH IS ON...

As every mother knows, a smooth household routine is a big responsibility. The rush is on from early dawn until late at night with little time to be wasted. So naturally you're grateful when your baby is happy and contented—plays for hours on end without demanding your attention. Chafed and irritated skin is a frequent source of discomfort to small babies. To help prevent these skin irritations, apply 'Borofax' after every change of diaper and following baby's daily bath. 'Borofax' is a soothing, protective, water-resistant ointment with 10 per cent of boric acid in a bland emollient base containing lanoline. It helps counteract excessive drying of the skin and is often prescribed by physicians to relieve irritation caused by wet diapers. At all drug stores in tubes of ¾ oz.—25c, 1¾ oz.—50c. Easy to use; no spilling; a little goes a long way.

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in Social Work Publicity at the New York School of Social Work. Together and singly, Mr. and Mrs. Routzahn wrote and published many books, pamphlets and magazine articles as well as a mass of itemized sources, suggestions and statistics, all designed for the use of beginners and veterans in public health education.

Dr. Bruno Gebhard, director of the Cleveland Health Museum, paid tribute to their final joint achievement when he said, "I make no understatement when I say that, without the Routzahns, we would not have had the great health exhibits at the New York World's Fair [exhibits which Mr. Routzahn, who died in 1939, did not live to see], nor a health museum in Cleveland."

CANCER EDUCATION

If a recent report from Michigan is an indication of the general trend, the Women's Field Army of the American Cancer Society is taking long strides toward its goal of a cancer-wise public. Its fund-raising drives have met with a success which officials say is encouraging from two angles: it shows that people are becoming aware of the society and are heartily sympathetic with its motives, and it provides the society with the money necessary to carry on and intensify its educational and remedial work.

As an educational organization, the Field Army aims to spread information on cancer through the largest possible audience. By means of radio, movies, and lectures, pamphlets and other written materials, vitally helpful information is distributed to a public which is too often unconscious of the cancer threat. Work is carried on by small units which function within the community and are aided in administration by the state and national organization. County fairs, service clubs, department store windows, and conventions of various organizations, as well as theaters and the family radio, are scenes of the society's activity. Volunteer workers, in spite of increased demands on their time by war charities and such, have rallied in greater numbers than ever before to the aid of the Field Army, and organize programs and exhibits, show movies, give speeches and distribute pamphlets with an energy which does credit to the aims of the society.

Not all the work of the organization, however, is educational in purpose. From its budget the society contributes sums to hospitals to be used for free diagnosis

for Optimal Growth

The extent to which nutritional needs are satisfied may well make the difference between a healthy, robust child and one who is retarded in growth and given to more frequent illness. Ovaltine, added to the child's diet, may well bring the intake of essential nutrients to the optimal level at which the child's full potential of growth and development can be realized.

during Illness and Convalescence

Ovaltine is readily taken during and after illness, though many other foods may be refused. The wealth of essential nutrients provided by this delicious food drink, made with milk as directed—biologically adequate protein, quickly utilized carbohydrate, highly emulsified fat, all the important vitamins except vitamin C, and needed minerals—proves a valuable aid in maintaining nutrition and speeding recovery.

for the Feeble and the Aged

Ovaltine is digested with remarkable ease. Its curd tension is low—about one-third that of milk alone. Hence it leaves the stomach readily and, even when digestion is less vigorous as in the feeble and the aged, it does not lead to upper abdominal fullness or other digestive discomforts. In the restricted diets which so many aged impose upon themselves, Ovaltine is particularly valuable since these diets are usually deficient in one or several of the essential nutrients which Ovaltine provides in such abundance.

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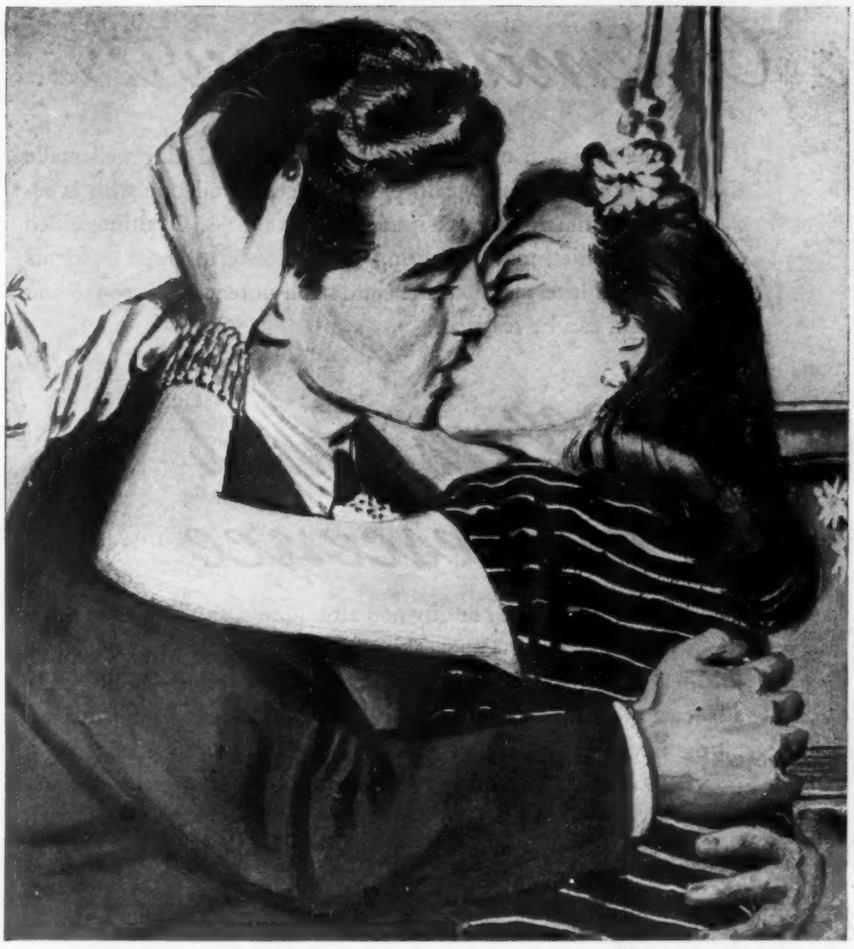
Ovaltine

The daily contribution to good nutrition made by three glassfuls of this palatable drink, each made of ½ oz. Ovaltine and 8 oz. of milk,* is here shown.

PROTEIN	31.2 Gm.	VITAMIN A	2953 I.U.
CARBOHYDRATE	62.43 Gm.	VITAMIN D	480 I.U.
FAT	29.34 Gm.	THIAMINE	1.296 mg.
CALCIUM	1.104 Gm.	RIBOFLAVIN	1.278 mg.
PHOSPHORUS	.903 Gm.	NIACIN	7.0 mg.
IRON	11.94 mg.	COPPER	.5 mg.

*Based on average reported values for milk.



Are you as nice close up . . . as you are at a distance?

Be lovely to love!

You'll never have to wonder about staying sweet and dainty if you use FRESH! For FRESH *contains the most effective perspiration stopping ingredient known to science!*

FRESH is effective! Stops perspiration worries *completely*. Prevents odor *harmlessly*.

FRESH is gentle! Won't irritate normal skin.

FRESH is sure! Keeps perspiration stains and odor out of clothes.

FRESH is pleasant! Stays smooth, never turns gritty. Doesn't dry out in the jar.

Stops perspiration worries completely

and to provide treatment for cancer patients who are unable to pay for it. Individual districts have used their surplus funds to purchase surgical dressings and morphine for cancer patients. These and many other services have been rendered by the Field Army of the American Cancer Society to prevent greater inroads by cancer and to improve the condition of those already afflicted with the disease.

FIGHTING MALARIA

Crop dusting methods employed in the United States in the war against the boll weevil and other insect enemies are being used in the Mediterranean Theater of war to combat the malaria mosquito menace. Once the Germans were driven out, a report from the Army Air Forces says, it was necessary to go to work on marsh lands and flooded areas, which are prolific breeding grounds for hosts of malaria-carrying mosquitoes. The present control program, involving the employment of low flying planes carrying oil and insecticides, was developed to deal with the problem.

Planes roaring in at heights of not more than 20 or 30 feet off the ground generally carry 3,000 pounds of a dust insecticide, which is discharged in 45 minutes. Dusting powder is preferred by those in charge of the control program when large areas are to be covered. Other types of planes are used to carry oil sprays required for closely confined targets such as canals. The oil-carrying planes are fitted with four 37 gallon tanks. The whole load of the plane is discharged in one minute.

Frequently, the operations are conducted in formation. In the lead plane ride Lieut. Col. Justin M. Andrews of Decatur, Ga., chief malariologist of the theater, and First Lieut. Robert H. Dyer of Corpus Christi, Texas, whose civilian experience included dusting cotton for boll weevil in the South. Radio contact is maintained with other aircraft. When the malariologist spots an objective, Lieutenant Dyer deploys his aircraft to hit the target.

RECORD PEANUT CROP

Even the humble peanut has responded to Uncle Sam's clarion call for increased production, and this year the south has harvested a 200 million dollar crop, the largest in its history. Two hundred million dollars worth of peanuts means about two and a half billion pounds, most of which will be eaten salted, in candy or peanut butter.

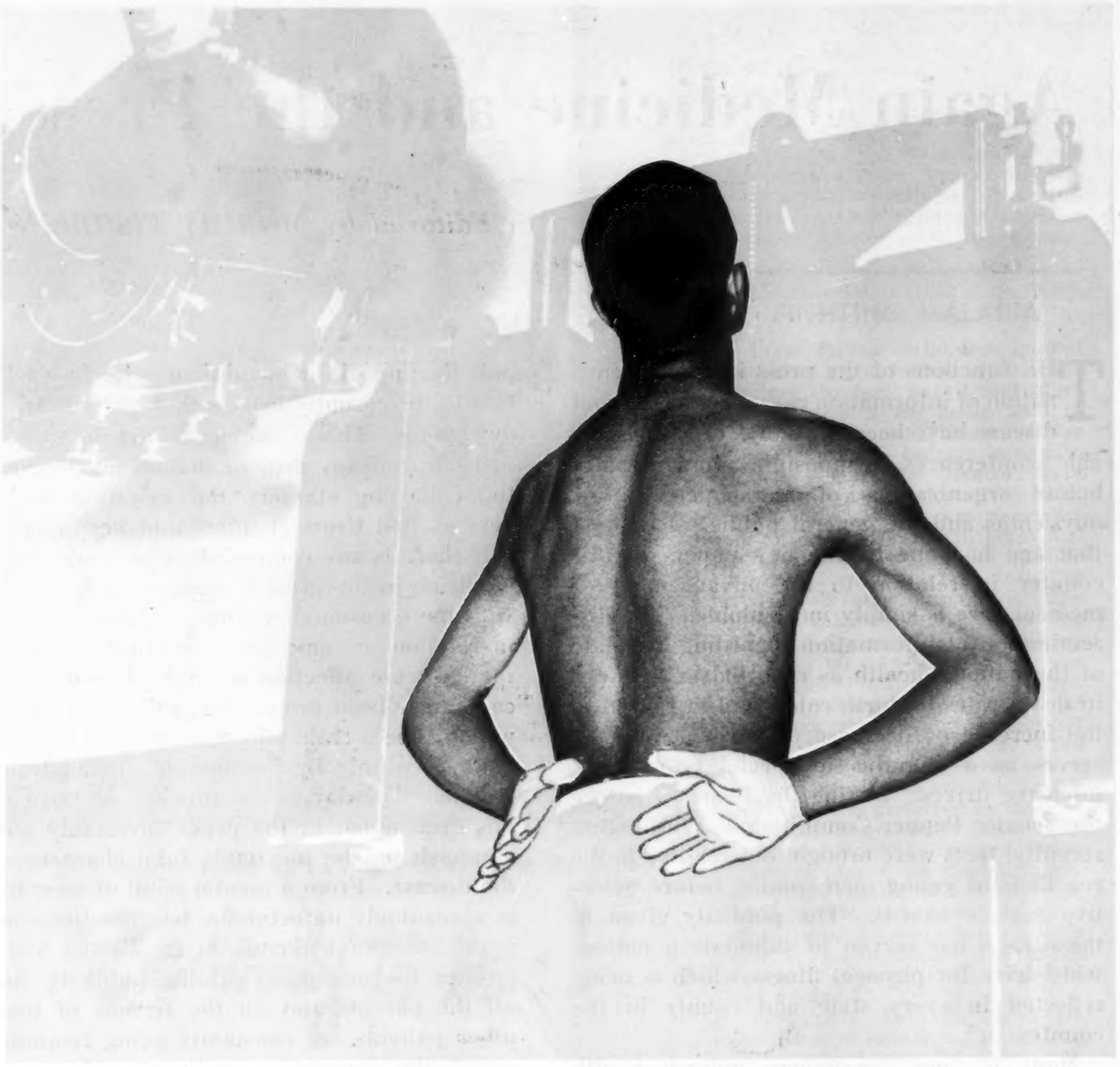
Again Medicine and the Press

An Editorial by MORRIS FISHBEIN

THE functions of the press in the dissemination of information regarding health and disease have been the subject of innumerable conferences, symposiums and debates before organizations of newspaper editors, physicians and the general public. The good that can be done by the newspapers of this country in relation to the advancement of medical care is simply incalculable. The dissemination of information regarding the state of the nation's health as reported in sickness, in death rates, in birth rates, and in regard to the increase or decrease of various diseases, serves as a stimulus to special efforts and intensive drives. During the hearings before the Senator Pepper Committee in Washington recently, facts were brought out relative to the reactions of young men coming before Selective Service boards. The publicity given to these facts has served to stimulate a nation-wide drive for physical fitness which is being reflected in every state and county in the country.

Many of our newspapers publish health columns which provide daily advice regarding the progress of science against disease. These columns tend to inculcate good health habits. Most of those that now appear are written by men who are physicians and are competent as regards both their medical knowledge and their ability to present scientific material in simple language. Twenty-five years ago there were three or four health columns devoted to the promotion of bizarre notions about diet and about medicine. Today there is only one such column having a national circulation. In the promotion of the blood donor campaign of the Red Cross, newspapers throughout the nation have rendered a most valuable service. Many a newspaper now puts the appeal for blood donors in close relation to the casualty lists as they are published day by day. These campaigns have done much to keep a steady flow of donors moving into the collecting stations and blood banks of various Red Cross chapters and hospitals.

If there is any complaint to be made about medicine in the press these days, it has to do with the occasional stirring of public emotion in relation to some long-continued, probably fatal disease affecting a child. Recently two cases have been prominent in the press of the nation; one a child with leukemia, apparently kept alive only by innumerable blood transfusions. The day to day progress of this case has been noted in the press, invariably with emphasis on the inevitably fatal character of the disease. From a mental point of view this is exceedingly unfortunate, because there are many cases of leukemia in the United States besides the one given all the publicity, and all the parents and all the friends of these other patients are constantly being reminded about the inevitable death. Another case representing a type that is often given tremendous publicity is a case of Wilms' tumor, a malignant condition affecting the kidney, in which, as far as we know, death almost invariably occurs. True, an occasional instance has occurred in which operation and x-ray treatment have postponed death, but it benefits neither the patient nor the public to have the despair associated with these cases constantly dinned into the public ear. The creation of hysteria and unnecessary anxiety is bad mental hygiene for the American people. It requires no special talent to arouse sympathy for a sick or dying child. Why cannot newspaper editors ask themselves the question: "Is this really necessary or desirable?"



The Use of X-Rays in

By J. ARTHUR MYERS and VIRGINIA L. DUSTIN

THROUGHOUT the centuries man has improved his methods of detecting the location of disease in the living body. He tapped the surface of the chest. He listened, first with his naked ears, then with the stethoscope. He peered through a magnifying glass and finally through a microscope. Eventually, he saw the tubercle bacillus. However, by none of these methods could the exact location and extent of disease in the lungs be determined.

In 1845 Wilhelm Konrad Roentgen was born. In due time he attended the University of Zurich, became an assistant in experimental physics, was appointed to a professorship in physics and mathematics at Wurzburg and interested himself in the phenomenon of radiation.

On Dec. 28, 1895, he presented a preliminary communication to the medical society of Wurzburg, and on Jan. 23, 1896, he actually appeared before the society and described his discovery of invisible light rays which penetrated wood, cloth and the softer tissues of the body but were obstructed by most metals and partially obstructed by bones. He took a photograph of the hand of one of the anatomists present in order that all might see.

The Roentgen ray, frequently spoken of as the x-ray, was so fascinating and its possibilities seemed so great that almost immediately it was put to many uses. It is employed today to determine whether or not automobile tires contain nails or breaks in fabric; whether or not foreign substances are present in candies and chewing gum; whether or not fruits have been damaged by frost; whether or not the metals that enter into parts of airplanes and ships contain cracks or bubbles, not seen by the naked eye, which might cause disaster. These are only a few of the numerous uses of x-rays in the nonmedical field.

Roentgen had shown how the ray penetrates the soft tissues of the human body, and how the dense parts, such as the bones, cast shadows. Immediately there was recognized a method of determining where a bone was broken and whether or not the parts were in good apposition and alinement after it was set. Promptly, two methods of inspecting by x-ray were developed: One consisted of using a fluorescent screen, and the instrument now used for this work is known as the fluoroscope. The other method consisted of substituting sensitized film for the fluorescent screen; then, after the film was exposed and developed, one had a photographic image of the shadows.

When the human chest was placed between the x-ray producing tube and the fluorescent screen or the sensitized film, it was observed that the ray readily penetrated the lungs; the only shadows cast were those of blood vessels and bronchial ramifications, and even they were often faint. However, the ribs, collar bones and shoulder blades cast fairly dense shadows, and even some of the muscle shadows could be partially outlined. In the central portion of the chest, between the two lungs, were such dense structures as the thick-walled heart containing blood, the great blood vessels entering and leaving the heart and even the sternum, or breast bone, and spine, all of which obstructed the x-ray and thus left shadows on the fluorescent screen or the photographic film. When a large area of disease existed in a lung, there was so much change in the density of the tissue involved that the ray did not penetrate this portion as well as it did the surrounding lung tissue; therefore, a shadow was seen on the fluorescent screen or on the photographic film. Soon the possibilities of x-rays as an aid in the detection of location of disease were apparent.

It was hoped at first that the various diseases would cast characteristic shadows—for example, that the shadow of lesions of pneumonia would be so different from the shadows of all other diseases that one could detect it immediately. Unfortunately, this hope was not realized. Indeed, it has long been known that changes in the lung produced by one disease may be so similar to those caused by another that even at postmortem examination the pathologist—who holds the lung in his hands and looks at its surface, cuts through it and views the cut surfaces of the disease—cannot always determine which disease is present. Often, it is only when he uses the microscope to find the germs which cause it or the special microscopic characteristics of the disease that he can truly diagnose the condition. For a time, too, it was thought that certain lung diseases had definite locations in the lungs for their development—for example, that tuberculosis always appeared in the apex and pneumonia in the base and that therefore just from the location of the shadow of disease one would be able to name it. But careful observation of areas of disease, from the standpoint of the symptoms they cause, the shadows they cast and the actual findings at postmortem examination, has revealed that there is no one part of the lung always involved in any one disease. While there is a strong tendency for tuberculosis to invade the upper half of a lung and pneumonia the *(Continued on page 56)*

Diseases of the Chest

Early recognition is the answer to tuberculosis, and the use of x-rays is the answer to early recognition

Lubricating Creams

By HERMAN GOODMAN

LUBRICATING cream—or night cream, as it is sometimes called—is a grease or greaselike cosmetic which was formerly known as "tissue cream" or "nourishing cream." The new names have become popular since the passage of federal, state and in some places municipal legislation regulating the manufacture, advertising and sale of foods, drugs and cosmetics. Since government officials have raised the question that nourishment of the skin or the tissues through any application to the skin surface is possible, the names "tissue cream" and "nourishing cream" have disappeared from cosmetic labels and advertisements, and in their place, with little or no change of formula, have come the new terms.

What was a "tissue cream"? What made a "nourishing cream"? Since time immemorial, human beings have sought to improve the appearance of the surface of the body. Attempts have always been made to make the skin conform to the standards of healthy youth. To this end, applications for the surface of the body, and particularly to the exposed face and neck, have been devised. Beauties of ancient times claimed retention of their youthful charms through applications of one or another type of grease.

According to old, popular folk-lore, massage would cause an ointment to enter the skin and nourish it. This was believed because the ointment or cream seemed to disappear when it was rubbed on the skin surface. For many years it was claimed that certain fats were chemically related to the fat in the fatty skin layers of the human being. Goose grease, for example, was popularly believed to be "nourishing" in this regard for many generations. Lanolin, or wool fat, also had a marvelous reputation in the same way. Chemical research has revealed the active principle or active ingredient of lanolin—cholesterin, a substance found in all animal fats. Cholesterin and its chemically active agents have been widely used in preparations intended for application on the surface of the skin with the intent of influencing the under-skin structures.

Until 1940 or thereabouts, tissue creams and nourishing creams depended on lanolin, cholesterin and similar by-products or extraction products of lanolin. Investigation of the truth or falsity of claims that cholesterin will penetrate through the surface of the skin to the underlying parts has resulted in diverse conclusions. However, it is not of particular importance here. It makes little difference whether a lanolin cream applied to the surface of the skin penetrates or does not penetrate, so far as its being available for nourishment of the skin at the site of application is con-

cerned. The possibility that a grease or grease-like product placed on the surface of the skin may penetrate to underlying tissue need not be affirmed or denied. But it should be emphasized that there is no proof that any substance applied to the surface of the skin penetrates the surface *and acts to nourish the skin at the site of application.* It is possible, of course, to place a tracer material in a cream, rub it on the skin surface and find evidence later of the presence of the tracer substance within the body. In certain experiments, for example, iodine included in the formula for a salve used for rubbing on the skin has been found later in the sputum. But this kind of proof of absorption is not proof of availability for nourishment at the site of application.

The type of cosmetic once called "wrinkle cream" is included today in the group known as lubricating cream. What is the cause of wrinkles? The wrinkles which are usually most embarrassing to women are those located

No cosmetic can "nourish" the skin or underlying tissue. But applying creams with massage may have some beneficial effect

about the eyes. The skin of this part of the face is of unique structure. In young as well as old people the skin about the eyes has a very thin layer of underlying, supporting tissue. You know about this, although you may not have given it much consideration. For example, you know that a blow on the fleshy part of the arm does not result in as much black and blue discoloration as a blow of similar force in the region of the eye. The reason lies in the lack of supporting connective tissue and fat around the eyes. Too, the skin is elastic. In youth, this elasticity is greatest. Have a child of 8 or 9 pick the loose skin under the eye and stretch it, pulling forward. Notice how rapidly it snaps back. Now have an older person do the same thing. Rarely is there as much elasticity, as much spring, as there is in youth.

Now you have the reason for wrinkles and "crow's feet"—the decreasing elasticity of the skin on the thin supporting structure beneath it. Authorities know that application of any cosmetic substance around the eye will not restore the elasticity of the skin and cannot add to the supporting connective tissue and fat globules.

But the question still remains: Can lubricating creams made with the same or similar formulas to those used for the older tissue cream or nourishing cream or wrinkle cream nourish the skin, encourage tissue formation or remove wrinkles? In part, of course, the answer depends precisely on what is meant by the word "nourish." Physiologists acknowledge that the massage which usually attends the application of a nourishing, tissue, anti-wrinkle, night or lubricating cream may have a noticeable effect on the skin at the site of the massage. It is possible, for example, to effect an exchange of blood elements through the reaction attending the application by massage of a cream so formulated as to deserve the title of lubricating cream. It is not entirely clear exactly how such massage effects an exchange of blood elements, and it is not clear exactly what the exchange of blood elements does. Presumably, however, this exchange is the physiologic change referred to in claims of "nourishment." At any rate, it is apparent that whatever the changes, they result from the massage rather than from any one particular agent used in connection with the massage.

A few years ago oxygen exchange was mentioned as taking place in the skin. Recently, the presence of oxygen-bearing blood vessels in the superficial layers of the true skin has been questioned. If there are no arteries or arterial capillaries in the upper layers of the true skin, it is difficult to imagine how any oxygen exchange can be effected.

In actual experience, of course, many women may have found beneficial results from the application of lubricating creams. True, the application does not result in the restoration of elasticity. True also, there is no replacement in the connective tissue support of the skin where such support is most desired—as, for example, around the eyes and in the neck. However, it may still be true that some women who habitually apply lubricating creams will show less noticeable effects from crow's feet and wrinkles along the neck than women who ignore this form of cosmetic application.

Finally, some mention should be made of that variation of lubricating cream formerly called "muscle oil." Muscle oil was the liquid counterpart of lubricating cream, nourishing cream or anti-wrinkle cream. All the disadvantages and all the advantages of lubricating cream may be restated for muscle oil. Massage—gentle and properly directed—may be helpful to some. But the general health and good diets of women who are financially able to buy and have sufficient free time to apply lubricating cream or muscle oil probably account for most of the excellent results they are alleged to have obtained.

ARE DOCTORS PEOPLE?

By ROGER I. LEE

Since the days of tribal medicine men, doctors have been set apart from others. Yet doctors *are* people!

IN MANY folklores the doctor, or rather his equivalent, is set apart from ordinary people. He is seen in many forms and guises. The medicine man is part saint and part devil. There are madness, witchcraft and chicanery in the primitive medicine man, but there is a larger amount of wisdom, sanity and honesty.

Of course primitive people merely created out of their own experiences—emotions, desires, fears and joys—their own gods, devils, saints, medicine men and various other important figures in their daily lives. Once the pattern was roughly established, there was a strong tendency to continue the type. But each medicine man used his own imagination, his own personality, good or bad, his own experience and a few of his own tricks to alter the pattern somewhat.

Strong members of the community or tribe always attempted to use the medicine man for their selfish ends. Sometimes they succeeded, sometimes they lost, and sometimes there was a new medicine man.

No brew of medicine, however, no matter how cunningly concocted, even in the most favorable phase of the moon, can heal certain mortal wounds or cure certain mortal diseases, nor can such a brew restore a lost limb, eyesight or hearing, nor replenish the ravages of time. Thus it often seemed the part of discretion, if not of wisdom, to leave the medicine man, so to speak, on his own. If his brews, medicines and incantations were not satisfactory, one could try the potions and performances of another medicine man, perhaps one in a nearby community, perhaps one in a distant community, who had a reputation for healing certain ailments, or perhaps an upstart competitor in the same community.

Well, has the situation changed much fundamentally? Patients get dissatisfied and seek help in distant places now as they did in the days of medicine men. The community gets about the sort of medical practice it really wants and creates. At times the doctor is better than the community deserves, but in a small community especially, the doctor of today like the medicine man of old, is quite at the mercy of malicious gossip. Of course, it is true that whereas the doctor gets blamed for many circumstances and accidents over which he has no control, he is also praised for certain happy outcomes to which he may have contributed little. But the balance is favorable to the doctor. In the days of the apprentice method of education of the doctor, the old doctor passed on to his apprentice the secrets and tricks of his practice. Those were the days of rugged individualism of doctors. It was this type of family doctor who caught the imagination and acquired the affection of a grateful

community. Perhaps his practice of medicine was not perfect. Perhaps only sometimes did he bring cure, but he always brought comfort, physical and mental, to the patient and his family. In the modern days of formal medical education, medicine is far, far better, but it is less free and independent than in the days of the family doctor. Unfortunately or fortunately, as you will, medicine is now under the profound influence of lay opinion and lay action.

The controlling bodies of educational institutions are naturally largely composed of laymen, so far as medicine is concerned. Furthermore, there is lay control of the funds of some medical schools. Of course the situation varies, but the president of a state university has to spend much time defending his budget before legislative committees. Some of the legislators have extremely positive ideas in regard to education, including medical education. Too, the president of a privately endowed university spends his time in argument with possible benefactors instead of with state legislators; and benefactors, like legislators, have their prejudices. In other words, the community still creates the "medicine man" in the image and in the pattern that it thinks can deliver the most effective brew!

Now, this concept is not entirely whimsical, because it was not so long ago that a health officer found himself in jail for having ventured to diagnose a case of bubonic plague. His part of the country would not admit the existence of plague, and that was that! It turned out that the disease was not plague, and the doctor got out of jail, but, after all, it was a lay resort to coercion in an unpleasant dilemma. It was merely the old story in a new setting: the tribal chief was sterile and his favorite wife was pregnant. Medical truth in the early days bowed to social convention, and even today it sometimes has to give a nod if not to turn a deaf ear.

Leprosy is a terrible disease, and no one wants to catch it. Consequently, because you and I do not want to have it, in our lay capacities we permit the unfortunate victims of this disease to be segregated on lonely islands. Such is the law and the practice. The truth is that leprosy is not especially contagious. Such barbaric cruelty is unjustified by the known medical facts.

These illustrations could be multiplied many times, adding more evidence of the dominance of the community over the medicine man. We must also accept the fact that the community, from the days of folklore and the medicine man to the present, has conceived the medicine man and the doctor as some one apart from the rest of the tribe or the rest of the community. In the old days the medicine man often lived apart, painted his face and wore extraordinary masks. As part of his performance he went through grotesque gyrations and gymnastics. Within the memory of many readers, doctors wore an affair called a "Prince Albert," or frock coat. Certainly doctors were then, even more than now, rugged individualists, and I cannot visualize a convention of doctors setting up the Prince Albert coat as a uniform for the profession. Consciously or not, the wearing of it was a dictum from the community.

An erstwhile intern of mine in another city replied to my remark that because he drove such a luxurious car he could not be doing so badly financially: "In this city, patients will not go to a doctor who drives a cheap car. I know because I tried it, and all my good friends and good patients spoke to me about it." I was about to make some remark more emphatic than polite about that city when it occurred to me that I had intended to ask him how he liked his office in an office building, since I was considering moving my office to a similar building. Such a building had, at first anyway, to be within a very restricted area—just the opposite of course, to the red-light district in character, but really having the same implications. Of course, if one is famous, it makes no difference where one's office is. I know a doctor who receives his patients in bathing suits on the sand under a sun umbrella, but the locality is Palm Beach, and the doctor is a neuropsychiatrist.

Not long ago, a United States senator telegraphed that twenty doctors were needed at once for a war-boom town in his state. By the time the papers got through with the story, it was two hundred doctors. There was no information about the kind of doctor wanted. It turned out that probably two doctors were required for a manufacturing plant—one a general practitioner and the other a physician with some knowledge of industrial medicine. One is always hearing of large areas without a doctor. I have traveled through some of those large areas, and there appeared to be little worth while in them, except the train I was riding in. Whole counties in Kentucky do not have a doctor. I used to be dismayed by this until I learned how many counties there are in Kentucky. I have forgotten the number, but it is well up in three figures. What kind of doctor do people want in the mountains of Kentucky and Tennessee? Certainly not a "Yankee" doctor. A native doctor could practice, but he could not be paid, because there is nothing to pay him with. As one goes through Massachusetts one finds small settlements without any doctor. *(Continued on page 70)*

OF INFANTILE PARALYSIS VICTIMS

By C. L. LOWMAN

THE important social, educational and spiritual aspects of the lives of poliomyelitis, or infantile paralysis, patients should receive more attention than they commonly get now. The orthopedic surgeon is primarily the person to whom the patient and his anxious parents turn when poliomyelitis leaves human wreckage behind which must be assessed for "salvage" possibilities.

These facts were revealed in a survey of social, educational and vocational aspects of the "post polio" problem made at the Orthopaedic Hospital of Los Angeles in 1942. Made under a grant from the National Foundation for Infantile Paralysis, this study showed very definitely the relationship of physical reconstruction to the social-educational-vocational status of the poliomyelitis patient.

In this survey it was our endeavor:

1. To make a contribution to the work of the National Foundation by evaluating the experience of twenty years of continuous care of poliomyelitis patients in the Orthopaedic Hospital at Los Angeles.

2. To check on past performance in order to improve our work for the new patients coming in.

3. To supply data relative to our methods and results which might be compared to similar studies in other institutions, so that the Foundation might evaluate technic and methods.

4. To find the relation of our physical reconstruction to the social-educational-vocational status of the poliomyelitis patients.

5. To test the validity of the major thesis of the Orthopaedic Hospital approach: that consideration of the future social, educational and spiritual status of the patient should be just as important as the surgical, medical and economic aspects.

6. To set forth any facts elicited from the older patients regarding their individual social and economic problems and to indicate factors in need of further study.

During the past twenty-five years it has been our objective at the Orthopaedic Hospital to integrate every phase of activity to all the needs evidenced in the lives of patients. A mental hygiene department, with a psychologist and consulting neuropsychiatrist, was established in 1917. A department of social-educational activities, under the Crippled Children's Guild, is responsible for interviewing patients over 15 and recording facts pertinent to their future needs, particularly those related to personality problems, social adjustment, educational and vocational status.

Our chief concern has been to establish facts relating to what we call the prevocational status—all the features of the patient's previous life and present condition which may affect his ability to earn a livelihood. It took many years to interest lay organizations and

the public in this work. It has always been comparatively easy to arouse enthusiastic response to programs for physical reconstruction, but it is much harder to awaken interest in the social, educational and spiritual work. We have always felt that the only sane and economical approach to polio problems is an all-out attack over a long period. Just as a parent guides his children from early years toward their future goals, so we begin, not

	Male, per cent	Female, per cent
Dynamic	10.8	9.5
Attractive	24.3	24.3
Negative	33.7	41.8
Unpleasant	22.3	19.1
Offensive	8.9	5.3
	100.0	100.0

later than in the patient's twelfth to fifteenth year, to establish trends, obtain evidence of personality faults, establish the patient's social status and aid in the educational program.

This study dealt with 437 patients 16 years of age or older whose names were drawn at random from the hospital's files. Two hundred and three male and 234 female patients were interviewed; the age range was from 16 to 43, with 90 per cent 30 years of age or under. Ninety-five per cent of the patients were white; the balance were Mexicans, Negroes or Orientals. Sixty-eight and four-tenths per cent were from American born parents; 26.3 per cent with one or both parents foreign born. More than 50 per cent of the entire group were 22 years of age or older; 23.7 per cent of the men and 29.5 per cent of the women were married at the time of the interview. Some of those under 22 were married, but a large number were still single: 73.5 per cent of the men and 66.6 per cent of the women.

The need for an education to enable these patients to support themselves and lead normal, independent lives is obvious. It is important for the public to realize that the educational and vocational needs of this group, as well as their physical needs, must be met if independence is to be theirs.

Ultimate achievement is not necessarily the result of high intelligence. The adjustment of the personality of the handicapped child is a definite necessity. The first impression a person makes in social contacts or in seeking employment is not to be overlooked, so the interviewers decided that the impression made on them would be a serviceable guide to the patient's personality rating. Hence the following characteristics were recorded: Dynamic, attractive, negative, unpleasant, offensive. The results are shown in one of the accompanying tables.

The cripple must be adjusted in relation to himself, his family and his friends, and, for a satisfactory life, he must accept his handicap and acquire a proper evaluation of his physical self. We have found polio victims with only minor physical defects who were badly affected as to personality and behavior, whereas some of those who were badly stricken succeeded because a satisfactory mental and emotional adjustment was made. The facing of reality had been forced on them by the severity of their affliction.

More than half of this group of 437 patients had some paralysis in one or both legs. Four per cent of the women had one or both arms only affected, and 13 per cent of both men and women had a combination paralysis of legs, trunk and one or both arms. Forty-eight and three-tenths per cent of the men and 53.2 per cent of the women were classified as severely involved. Apparent deformity has an effect on social and business contacts, and, since knowledge of that fact may affect the personality of the patient, records were made of the degree of deformity in each case.

Further records were made as to the marital status of parents or persons responsible for support of the family, occupation of the person responsible for such support, and the number of brothers and sisters. In many instances these factors played a part in influencing the status of the patient as to social, educational or economic outlook. In fact, all the factors that affect the psychologic side of the handicapped person's life have some bearing on his adjustment problems.

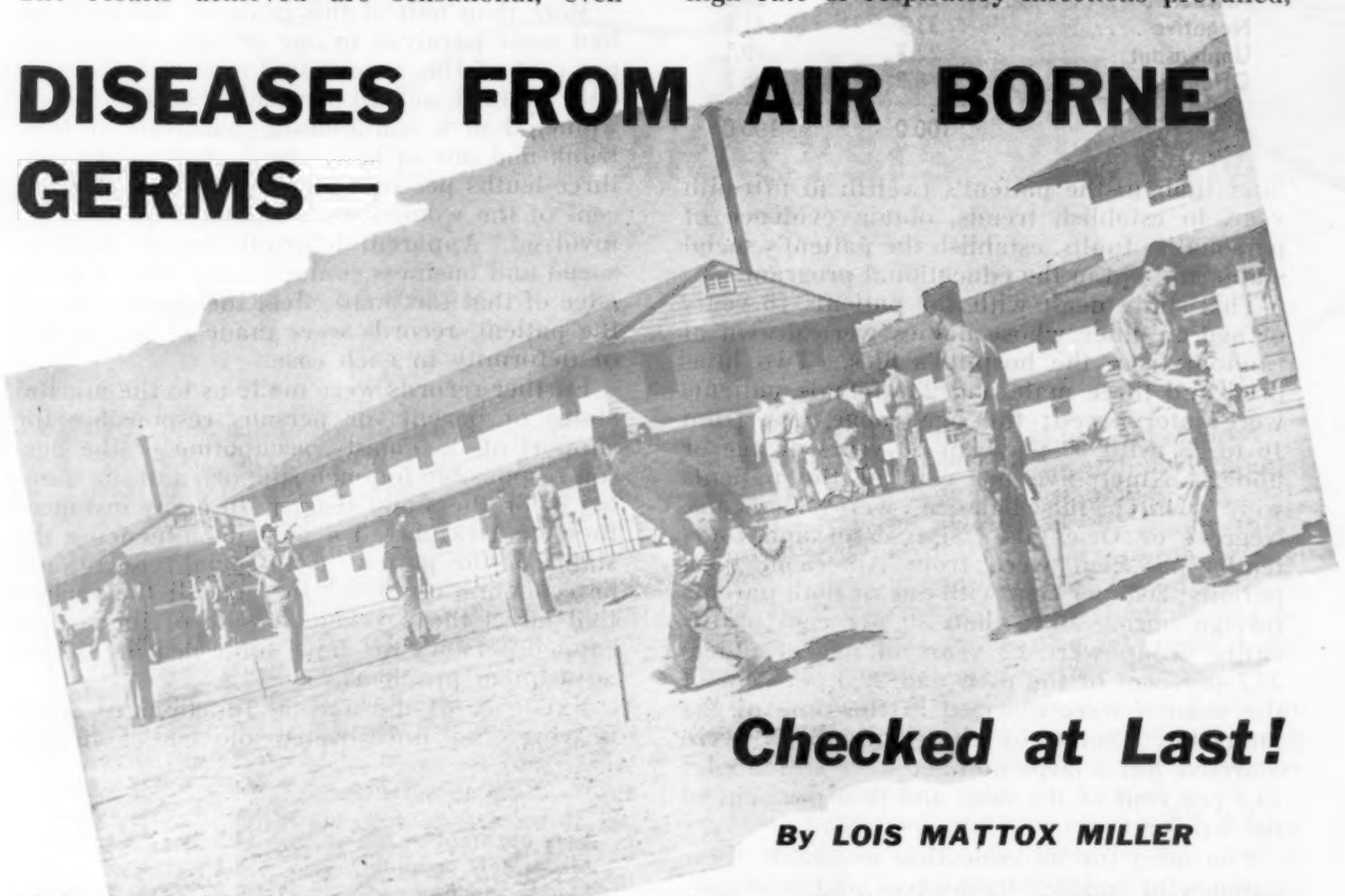
Existence of the normal functions of sight, hearing and unrestricted movement in the

	Male, per cent	Female, per cent
Very apparent	34.5	40.2
Moderately apparent	8.4	7.7
Slightly apparent	29.6	29.9
Not apparent	18.2	16.2
No deformity	9.3	6.0
	100.0	100.0

average person are accepted with little attention, but the loss or impairment of one of these functions at once centers attention on itself. A major adjustment to the new condition has to be made and may produce an exaggerated or distorted sense of its value. In some instances a compensation mechanism is set up and all energies are bent on achieving success in some activity, often to the detriment of health or otherwise balanced development.

As social approval of his fellows is needed by the crippled person, *(Continued on page 76)*

DISEASES FROM AIR BORNE GERMS—



Checked at Last!

By LOIS MATTOX MILLER

ARMY and Navy surgeons have won a smashing victory over the so-called respiratory diseases—meaning those that are caught by breathing in air-borne germs: severe colds, tonsillitis, measles, mumps, scarlet fever, meningitis, pneumonia and rheumatic fever, vicious producer of "heart cripples." In barracks and on ships, men live in such close association that air-borne diseases usually spread like wildfire. All the respiratory infections were common in the armed forces in 1942 and 1943.

They are now reduced to a bare minimum. The results achieved are sensational, even when presented in the sober language of scientific reports.

There has not been time or opportunity to work out the application of the new technics to the civilian population, but obviously the implications to public health are tremendous. There is good reason to believe the respiratory diseases will never again be the baffling problem they have been in former years.

When war came in 1941, science was well equipped to deal with battlefield injuries. But the doctors in uniform were worried about the common diseases that were bound to multiply under wartime conditions. During the first year of the war, in a single navy camp of 43,000 men there were 4,973 cases of scarlet fever, 1,375 cases of rheumatic fever, 1,283 cases of pneumonia, and 50,000 cases of tonsillitis. A total of 557,056 man days were lost from active duty; counting the time consumed in caring for the sick, the loss soon mounted to 1,671,171 days in this one camp alone. Obviously the "strep" microbe was doing more to sabotage the war effort than any enemy action. The Navy estimated the damage done at that one training center to amount to $15,000,000.

In the Army during 1943, 7,000,000 men spent more than 14,000,000 days in hospitals with sore throats, head colds, sinusitis, flu, pneumonia and similar ills. And wherever this high rate of respiratory infections prevailed, doctors noticed a sharp rise in rheumatic fever.

Rheumatic fever has long been recognized as one of the major public health problems of the United States. It is a common disease of childhood, and it also occurs frequently in young adults. It begins insidiously, like nothing worse than a bad cold, then it causes fever, pain, swelling of the joints, and finally attacks the heart valves. It frequently leaves the victim with a weakened heart that may result in invalidism or death in middle life. Although the fact isn't generally known, about five times as many people die of rheumatic heart disease each year as from infantile paralysis, epidemic meningitis, whooping cough and measles combined.

So with rheumatic fever and the other respir-

atory diseases stalking through the armed forces in 1943. The order went out to the medical men of the armed forces to wage relentless war on air-borne infections. The problem was a tricky one. For instance, the cause and the cure of rheumatic fever are still unknown. Doctors believe that heredity, weather, climate, environment and living conditions all have something to do with it. They do know that it usually follows an infection produced by a microbe called the hemolytic streptococcus, like the familiar "strep throat."

Army Air Forces surgeons working under Col. W. Paul Holbrook, found that more than half the respiratory diseases occurring at AAF bases were associated with that particular type of streptococcus. Colonel Holbrook also found that rheumatic fever always reached epidemic proportions following an outbreak of hemolytic streptococcal infections. One line of attack seemed plain: knock out the strep microbe and you'd probably check about half the respiratory infections and stand a fair chance of halting rheumatic fever as well. But how could you deal the knockout blow?

Simultaneously, surgeons in the Army, Navy and Air Forces turned to the one weapon that is effective against the hemolytic streptococcus: one of the newest of the sulfa drugs, sulfadiazine. But they took it up timorously. Mass administrations of the sulfa drugs involve some dangers. While a majority of patients can take sulfa drugs with little or no ill effect when properly administered by an experienced physician, some individuals suffer severe reactions—skin rash, headaches, even mental confusion and delirium.

Colonel Holbrook in the AAF, Commander Alvin F. Coburn in the U. S. Navy, and others, from their long experience with the sulfa drugs in civilian practice, knew that extremely small doses of sulfa could be given safely so long as the patient was kept under close observation and submitted to periodic blood tests, and if treatment was suspended immediately when unfavorable results appeared. Since close supervision was possible under the disciplined routine of army and navy life, the doctors decided to go ahead.

During the winter of 1943-44, surprised gobs and GI's at scores of army and navy establishments were lined up daily and made to swallow their sulfa pills under the watchful eyes of non-coms and petty officers who had orders to see that each man downed his dose and no foolishness about it. In each camp a "control group" was purposely left untreated so that the doctors could measure by comparison exactly how effective the sulfa drugs were.

The results: Meningitis was practically eliminated, streptococcal infections, including acute tonsillitis, were reduced between 75 and 90 per cent, and other respiratory diseases, including lobar pneumonia and colds, were cut down by more than 50 per cent.

At one large AAF base in the southeastern United States there was a severe outbreak of meningococcus meningitis. The base surgeon immediately administered sulfadiazine to all men on the base and halted the epidemic in its tracks. A flurry of scarlet fever which occurred simultaneously at the same base disappeared entirely after the drug had been administered.

The Navy's experience was equally successful. At one large establishment near Chicago where strep infections had been running rampant, the scarlet fever rate dropped within three weeks from 171 cases to none, rheumatic fever fell from 87 cases in one week to 6 cases in the fourth week. General respiratory diseases were reduced by 80 per cent for the whole season.

In both the Army and the Navy the number of unfavorable reactions to the sulfa drug was reduced to a fraction of 1 per cent.

Final results of the Army Air Forces frontal assault on rheumatic fever have not been disclosed to date, but it is estimated that the rate of occurrence has been reduced by about 75 per cent. Colonel Holbrook has stated frankly: "It is difficult to guard one's enthusiasm in the face of such results."

But the sulfa drugs have not been the only weapons with which the Army and Navy doctors have waged their successful war against the air-borne microbes. Under the direction of the Office of Scientific Research and Development, scientists from the University of Chicago and Northwestern University developed a glycol spray which, although harmless and odorless, is probably the most effective microbe trap yet devised by man. Sprayed in a room it reduces the number of germs in the air by more than 97 per cent. If the floor, walls, bedding and fabrics are sprayed carefully, they become almost like flypaper in trapping the air-borne microbes in the room.

Scientific tests have shown that use of the glycol spray in army barracks practically eliminated hemolytic streptococci from the air, checked the spread of respiratory infections, and successfully brought at least one epidemic of mumps under control.

Conspicuous also in the attack of medical science on dissemination of infectious germs is the use of the ultraviolet ray to destroy such organisms in the air of wards of great hospitals, in institutions for the care of children, and in the operating room. The practicality of this technic having been established, institutions are already *(Continued on page 42)*

Certain kinds of glass have been found which reduce glare, cut down eyestrain and flyers' headaches. These are used in aviators' goggles today

UNIQUE types of colored glass which play fantastic tricks with light rays are today helping win the twin battles of war and war production. As a sponge soaks up water, so this little known glass absorbs undesired, invisible rays and dazzling glare, transmitting at the same time useful, visible light.

These distinctive optical properties make this glare-destroying glass exceptionally important in war production here and military operations abroad. For example, lenses made from it are essential in aerial dogfights. But let a fighter pilot tell the story:

"Our eyes need plenty of protection when we play hide and seek with Jerry in the clouds or stratosphere. He likes to attack with the blinding sun at his tail, relying on glare for concealment. But it doesn't work. My goggles let me see him—and that's all I need to beat him to it with a burst of hot lead."

On the industrial war front, a darker shade of the same type of eye-protecting glass must be worn by welders working close to the intense glare and dangerous invisible infra-red and ultra-violet rays generated by an electric arc. Here's the story of a welder working on a General Sherman tank:

"A guy who doesn't wear his welding goggles or helmet is flirting with blindness. Why, in some arc welding and cutting operations the glare is so terrific that we have to wear lenses that cut out the invisible rays and transmit less than 1 per cent of visible light."

To help speed the production of airplanes and other battle equipment where gas welding of aluminum posed a problem, glass chemists recently developed a new absorptive glass that permits gas welders to look through blinding glare and see welding operations from beginning to end. Motivation behind the invention was the fact that glass designed for electric arc welding lacked the power to absorb the characteristic flame-welding glare, so gas welders had to work in almost complete darkness, relying on their skill and experience to complete the job.

This remarkable new glass helps welders do more and better work because it actually possesses five different light-selective properties. It absorbs most of the blinding sodium flare generated in gas welding, at the same time preserving the orange and red color values so that the welder can see in brilliant colors the molten metal and the red hot bead from the welding rod. Also the glass reduces glare and absorbs the infra-red and ultra-violet rays.

Years of tireless research were required to develop various types of this mysterious absorptive glass that automatically sorts light rays, transmitting some and screening out others. Ordinary glass, by the way, lacks this power and lets through both the visible and invisible rays.

It was in 1909 that Sir William Crookes, famed English physicist and chemist, inaugurated the first really scientific attempt to con-

New facts about glass are constantly emerging from scientific tests. Glass today is vastly improved in usefulness

By H. R. MOULTON

HARNESSING LIGHT RAYS TO PROTECT EYES

trol light by means of glass. After four years of laborious experimentation, Crookes developed a glass of sage green color with good infra-red absorptive properties; also a glass which cut out ultra-violet rays. He was not successful, however, in developing a glass that absorbed both, at the same time transmitting adequate light. In a paper, "The Preparation of Eye-Preserving Glass for Spectacles," read before the Royal Society in 1913, Crookes stated:

"The ideal glass which will transmit all colors of the spectrum, cutting off the invisible rays at each end, is still to be discovered. As far as transparency, however, is concerned, it will not be an unmixed advantage for the sought-for glass to be quite clear and colorless. The glare of a strong *(Continued on page 74)*

Aerial observers and gunners have special visual tasks—and failure may result in death. So the newer types of eye-protecting goggles are vital

A few years ago this welding job would have caused severe eyestrain. But for this worker the new glass eliminates glare, adding safety and comfort

THE VISITING NURSE

By BEATRICE GRAY COOK

YOU may have seen her, trim and neat in her dark blue uniform, hurrying from call to call along the city streets. You may have read about her in "Nurses on Horseback," which tells how she gives comfort and new hope to isolated and impoverished mountaineers who have lost all contact with progress. Her professional nursing calls take her to all manner of places: wealthy homes and city tenements, schools, clinics, manufacturing plants and even, by rowboat, to shanties on backwater tidelands. She has lectured in Japan and nursed the natives in Africa, for American trained public health or visiting nurses are working in every country in the world, interpreting the findings of doctors, scientists and laboratories into the language and lives of the people.

But who is the visiting nurse?

She is a staff member of a public health organization which aids individuals, families and the community as a whole in adjusting social problems connected with disease or its prevention. She is one of 31,000 women in the United States who guide people of all ages in regaining and keeping good health, regardless of their race, religion or financial standing. Friend and health adviser, the visiting nurse is a student of human relations—a link between the theory of medicine and hygiene and its actual practice in the home. Almost as important as the bedside care she gives is the preventive work she does—teaching infant care to young mothers before their babies are born and afterward; instructing in home nursing so that members of a family may care for each other when ill. She also helps to teach new homemakers how to buy and use nutritious foods and reports on symptoms of faulty conditions which are easily corrected if found early. The doctor can cure so many diseases if he is only given the opportunity to see the patient in the early stages of the sickness. For the physician she checks on home conditions, helps the family carry out his medical directions, supervises isolation in communicable diseases and traces sources of both mental and physical afflictions. She is your own family doctor's associate, and they both work on the theory that sickness is to a large extent preventable. And public education, the nurse's own field, is the means of prevention.

Why is a visiting nurse needed?

Because, each day in the United States, there are approximately 6,000,000 persons ill, and only 20 per cent of these are hospital patients. This means that the vast majority—80 per cent—must be cared for in their own homes. Most mothers and housewives have neither the skill nor equipment to do expert bedside nursing; they cannot interpret symptoms which might lead to serious complications, for they don't understand the many interrelating factors in illness.

But comparatively few invalids sick at home need the care—nor can bear the expense—of a full-time, registered, graduate nurse. Bathing and surgical dressings for post-operative and industrial accident patients seldom require more than an hour or two of professional nursing. Hypodermics, treatments, special therapy and care of both mother and new baby may be handled by a skilled professional nurse in a relatively short time. Other members of the family, when trained and supervised by the nurse, may safely carry on for the rest of the day. The nurse telephones the patient's own doctor for daily instructions, and by reports and temperature and pulse recordings keeps him in close touch with the case.

Many patients, especially children, would not need expensive hospitalization if they had some professional care at home. In fact a leading New York pediatrician says that home is the best place for a sick child. Of course he makes exceptions when surgical care or specific therapy is indicated, when obscure diseases are to be studied or when inadequate home conditions are found. But in general he feels that the great majority of childhood diseases can be safely cared for at home, and that the help of a visiting or public health nurse gives the supervision that is necessary.

This hourly or part-time nursing care is especially valuable today, when many hospitals have a waiting list and the patient's hospital stay is cut to a minimum. To make room for others, patients are often discharged still needing professional nursing care. However, home convalescence can be an uneventful recovery if the visiting nurse, working with the patient's doctor, makes periodic calls. This is an economical form of nursing, for a single nurse may care for six or eight persons in one

day. A patient can have professional nursing care every day for a week for less than the cost of having a private duty nurse for one daily shift.

What does the visiting nurse service cost?

The average charge for a visiting nurse's home call is $1.25 for the first hour, though this fee may vary in different cities. Families able to do so pay the full amount. Others pay what they can, and for those who can pay nothing there is no charge at all. The fee is adjusted to the income. Free and part-pay calls are financed by local community funds or private philanthropy. When you pay the full charge, which just covers the actual, itemized cost of the visit, you are not asking for free service, you are paying your own expenses in a civic organization which serves rich and poor alike. It is as much a community project as a public school.

No call is ever refused! But continued bedside care is given only if a physician is in charge of the case. The visiting nurse service has the highest possible ethical and professional standards; it is directed in policy and practice by an advisory board of prominent doctors in each city, assisted by a board of representative citizens who direct routine procedures. In addition, some health departments are adding care of the sick to their programs of public health nursing.

Today medical science—at home and on distant battlefields—is scoring a tremendous advance in controlling and preventing disease. But there is always a gap between new discoveries and their application to everyday living. This can be filled to a large extent by public health or visiting nurses, who channel these gains to the people. The nurse's importance is appreciated by the famous Dr. William H. Welch of Johns Hopkins, who says that America has made three original contributions to public health: sanitation of the canal zone, state tuberculosis laboratories and the public health nurse.

In spite of war pressure, civilian health is generally good. That is, it appears good if one does not get below the surface. But the selective service draft gives ample room for alarm concerning the fitness and welfare of American youth. General Hershey, reporting for selective service in 1942, found 24 per cent of the draftees unfit for military service! About one man out of four was rejected. Of these rejects, about one third had disorders attributed to improper early nutrition. According to a survey by the Chicago *Times* in 1941, one ward in that city rejected 71 per cent of the draftees.

Surely there is work to be done. This shocking condition can be corrected in the coming generation only by increasing the emphasis on early detection and *(Continued on page 42)*

Here a visiting nurse calls to help rural mother of large family in care of new baby. Especially today, when doctors are so busy, this service fills a need

TESTING INTELLIGENCE AND APTITUDES

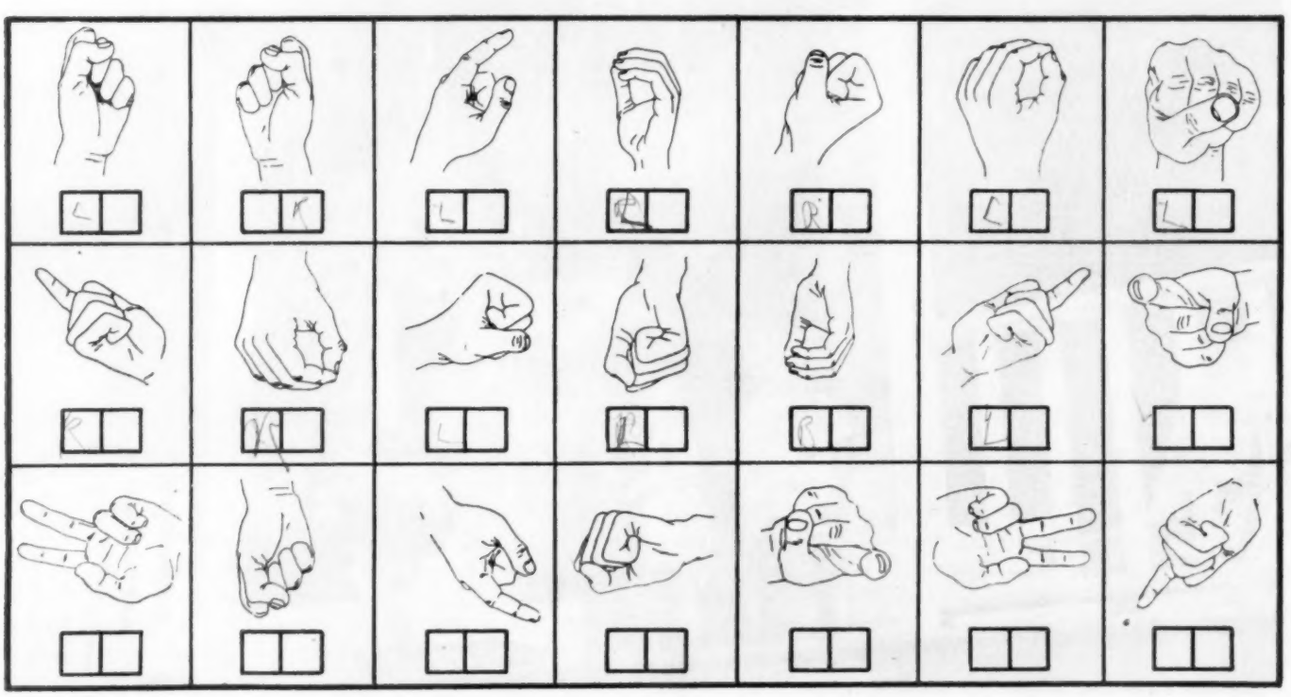
Here are the modern ways of measuring your various mental abilities. Try your mental skills in these tests. Then look on page 54

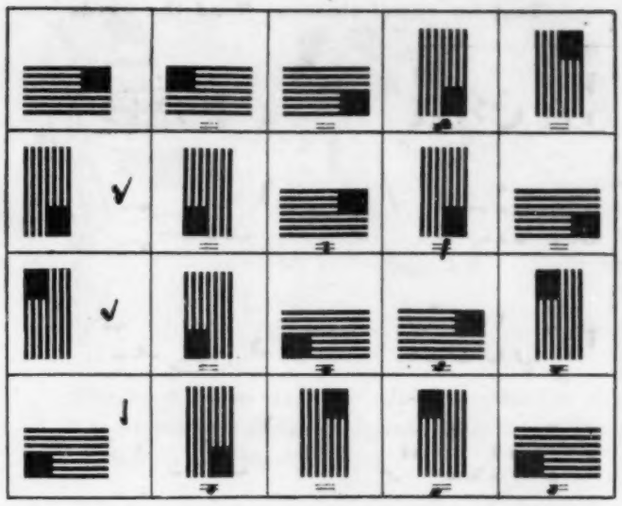
By L. L. THURSTONE

FOR MANY YEARS psychologists have described a person's mental endowment by a single index of intelligence such as the intelligence quotient—the familiar "I. Q." But it is well known among teachers and employers that two men may have the same general level of mental ability and yet be totally different as to their aptitudes and potentialities, and that therefore the single intelligence index is inadequate for the purpose of describing mental endowment.

It has been found necessary to use, in addition, other indexes of special abilities which cannot be represented by any single index of intelligence. Well known among such abilities, for example, is musical talent, which is really a complex of many abilities. Mechanical aptitude is another well known complex of abilities that cannot be represented by any single index of intelligence. The general use of a single index of intelligence such as the intelligence quotient should be discontinued because of its logical inconsistencies, but it is not the purpose of this article to elaborate on that particular problem.

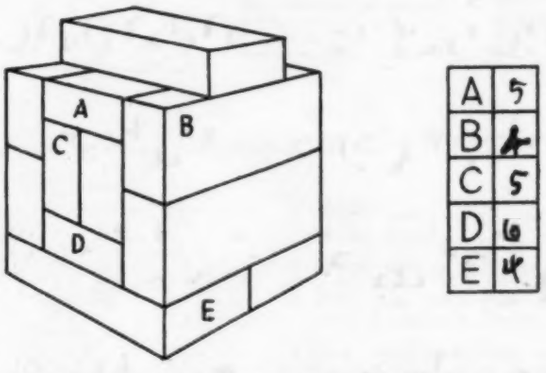
Indicate whether each drawing shows a right or left hand. This tests "space thinking"





Look at the first flag in each row. Then mark the others in that row which show the same side of flag

A better method is to describe each person in terms of a "profile" of abilities in which it is frankly recognized that two men may have the same level of mental endowment and yet be totally different, as shown by the entirely different types of work which they can learn to do and to enjoy. The counseling of young people about their education and life work should be done in terms of this profile of abilities and the temperamental traits which constitute their principal life assets.



Another test for the visualizing factor: Indicate how many blocks touch each one of the blocks A, B, C, D and E shown in the drawing

If we grant the soundness of this plan, then we must turn to the question: Just what are the fundamental human abilities and traits? Every writer on this subject can set up a list of qualities and their classifications. Hundreds of writers have done this, and there are almost as many lists of abilities and traits as there are writers who attempt to solve this problem by subjective personal judgment.

VEHICLES

wangc _____

cargiare _____

ract _____

nva _____

tuao _____

trina _____

gygbu _____

krcut _____

elds _____

comolitove _____

legsih _____

bleiccy _____

AMERICAN CITIES

gochiac _____

tiptsgrub _____

tooled _____

velecland _____

bulafof _____

vouislille _____

keemilwau _____

ettlsea _____

sleanpoinim _____

nothingsaw _____

orttide _____

dhomnirc _____

Word fluency test: Unscramble the words

A better plan is to solve the problem by scientific experiments to discover the differentiable mental functions. The profiles of abilities and traits should then be written in terms of the traits that have been found to be truly fundamental and independent and not in terms of the trait lists that any author may write on an intuitive basis. When we write Verbal Comprehension and Word Fluency as

PROVERBS

In each group of five proverbs mark the proverb which has a different meaning from the other four proverbs.

- ☐ A journey of a thousand miles begins with one step.
- ☐ Tall oaks from little acorns grow.
- ☐ Great ends from little beginnings.
- ☐ No grass grows on a beaten road.
- ☐ Large streams from little fountains flow.

- ☐ Familiarity breeds contempt.
- ☐ Every bird likes its own nest best.
- ☐ Sweets grown common lose their dear delight.
- ☐ No man is a hero to his valet.
- ☐ If every day were a sunny day, who would not wish for rain.

- ☐ There is no smoke without fire.
- ☐ A spark may start a great fire.
- ☐ Reputation may be ruined by a word.
- ☐ A small leak will sink a ship.
- ☐ Trifles may cause universal disaster.

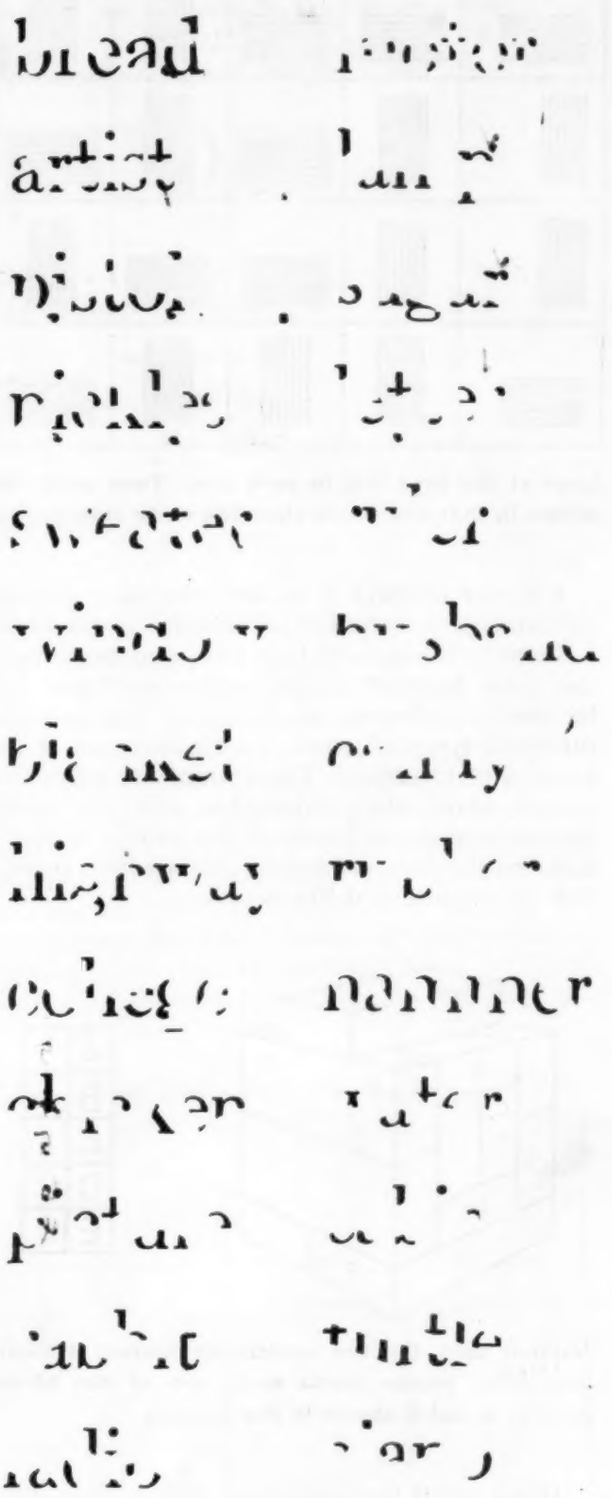
two traits, it is not just because we have thought up two different trait names. We write them as two distinct abilities in the profile because they have been shown experimentally to be two different mental functions.

Just how should the fundamental human traits be discovered and isolated? That is what "multiple factor analysis" was designed to accomplish. The development of multiple factor analysis was started in 1930 as an extension of the earlier work of the British psychologist, Spearman, whose method of

LETTER GROUPING: In each row, three of the groups of letters are alike in some way. Mark the one that is different.

AAAM	AACA	AAAD	AAAK
ABCD	EFGH	IJKL	OPST
BXYC	FPQG	JXYK	LXYM
DFDF	KLKL	STVW	BCBC
ABCP	CBAQ	ABCR	ABCS
DCCJ	DFFJ	DNNJ	DRSJ
CXYZ	CFGH	DPQR	CLMN
BEFE	HIJI	NOPO	TUVU

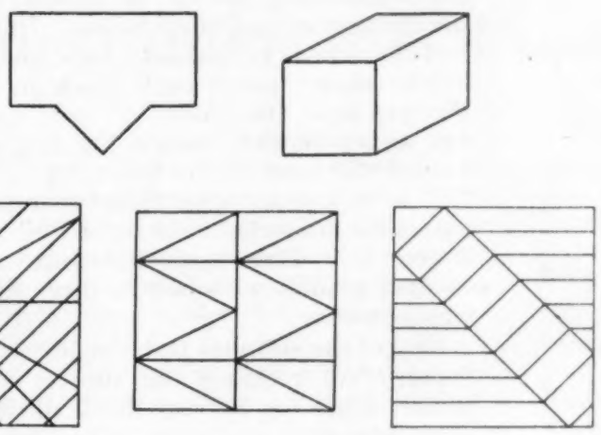
Test for visual closure: Read the words



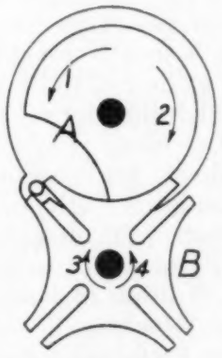
analyzing mental abilities was very suggestive but not quite adequate to cover the complexities of mental organization. The development of multiple factor analysis has been actively pursued by Americans and by some British psychologists and mathematicians for the past fourteen years, and the methods have been

Above: Another test for closure—identify the mutilated pictures. Below: this test measures two abilities —closure and flexibility

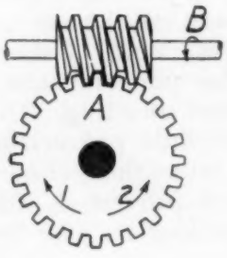
One of these two figures is contained in each of the following drawings. Mark only one figure in each drawing.



MECHANICAL APTITUDES



1. Which part moves only part of the time? _____
2. Which part is the driver? _____
3. Can this mechanism operate when A moves in direction 1? Yes No
4. Can this mechanism operate when A moves in direction 2? Yes No
5. If B moves in the direction 4 which way is A moving? _____
6. How many times does A turn around while B is turning around once? _____



1. If B turns in the direction shown, which way will A turn? _____
2. Can A be the driver? Yes No
3. If the worm were taken off, reversed, and replaced on the same shaft, which way would A turn? _____

1. If the fan is turning in the direction shown which way does it blow the air? _____
2. If this were a propeller on a boat, which way would the boat move? _____
3. If this were a propeller on an airplane, which way would the plane move? _____

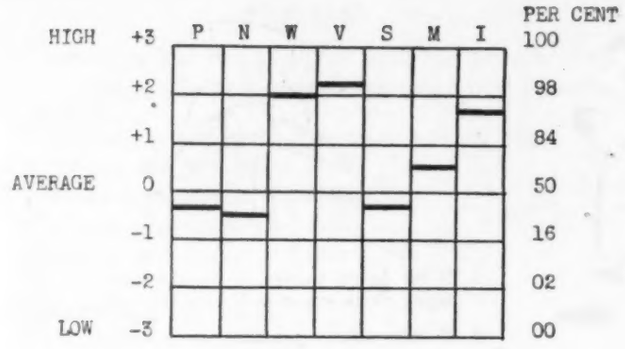
applied to a number of experimental studies in this field.

The exploratory studies so far completed have isolated a number of primary mental functions. These include Verbal Comprehension, which is designated by the symbol (V), Word Fluency (W), Number Facility (N), Memory (M) Visualizing or Space Thinking (S), Perceptual Speed (P), Induction (I), Speed of Judgment (J), two factors governing speed and flexibility of closure, an ability which is discussed later in this article, and several others whose existence is indicated but not yet isolated with confidence.

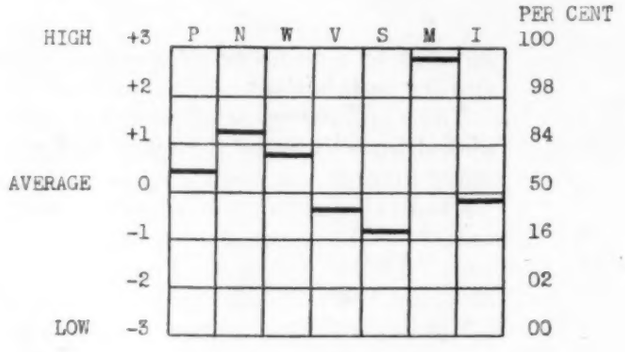
Nobody knows how many of these traits must be isolated before we can describe a person's mental endowment adequately for purposes of educational and vocational counseling. If we knew the fifteen or twenty socially most important of these mental functions we should probably be able to do the counseling quite adequately in most cases.

A brief description of some of the abilities that have been identified so far will help the reader to understand methods now in use. The space factor, for example, is the abiltiy to think in terms of two and three dimensions. It is the ability to visualize that was described by Galton in terms of his informal experiments over fifty years ago. Some of the tests for visualizing or space thinking are shown in the accompanying illustrations.

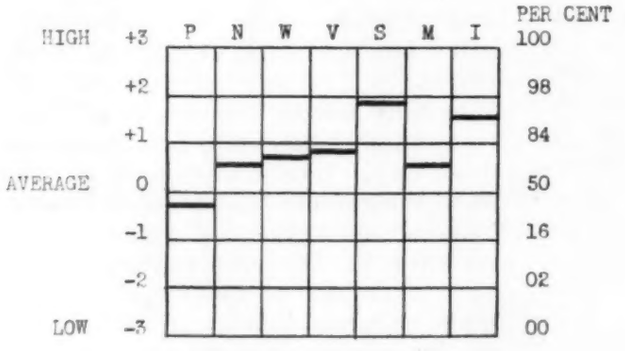
In one of these there are some drawings of hands in different positions. Here the subject, or person whose ability is being tested, is asked to



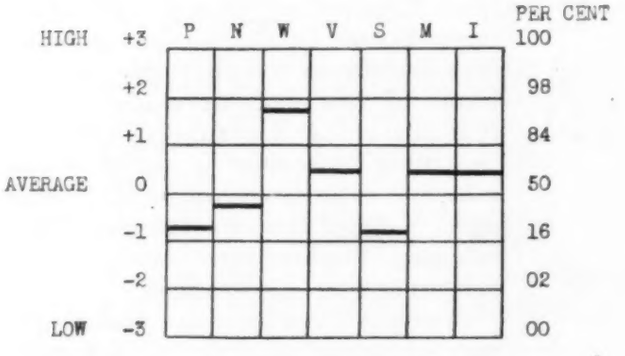
1) Teaching
2) Modern and classical languages



1) Stenographer
2) Court Reporter



1) Electrical Engineering
2) Business



1) Commercial Interpreting
2) Art or Writing

check each drawing to show whether it is a right hand or a left hand. Good visualizers can usually do this task easily whereas poor visualizers have trouble with it. Some people find it necessary to twist their own hands into various positions to see which hand is represented by each drawing.

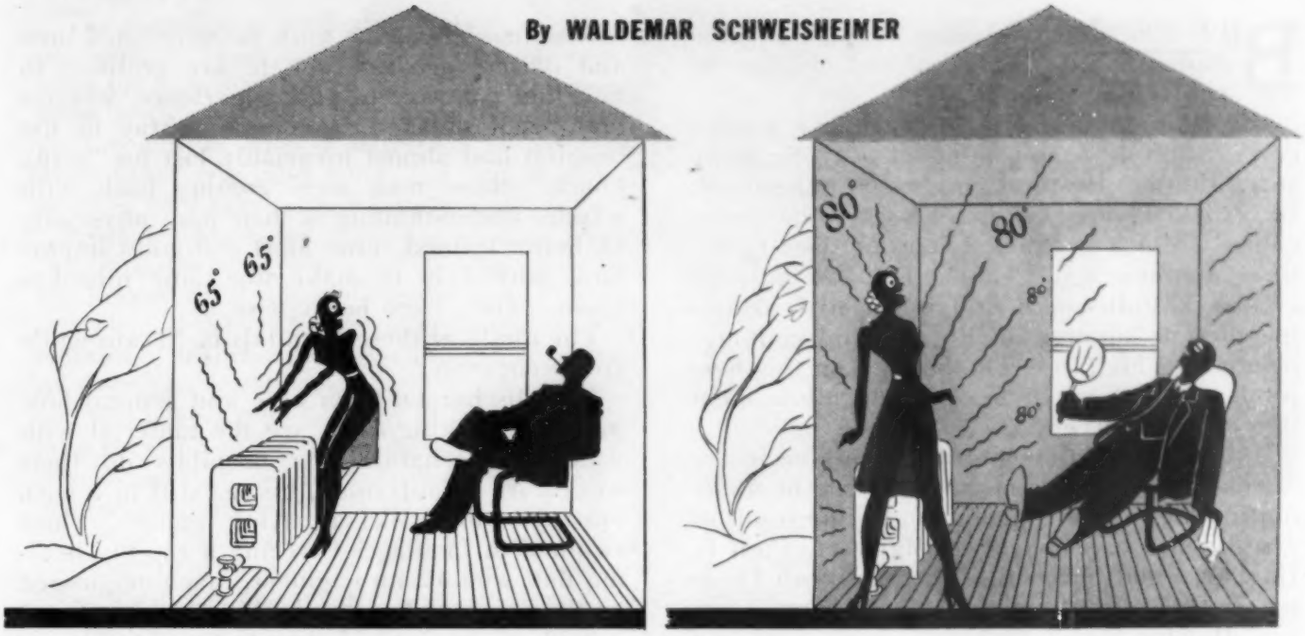
In another illustration one of the simplest and yet one of the most effective tests for the space factor is shown. This illustration shows a few items of the flag test. The subject is asked to look at the first flag in each row and to mark all the others in that row which show the same side of the flag. In the first row, for example, there is only one flag that shows the same side as the first flag. The reason this test is saturated with the space factor is that it requires ordinarily that the figure be turned in two or three dimensions. Facility in this kind of thinking involves the visualizing or space factor.

Still another of the many different tests for the visualizing factor is shown in one of the accompanying illustrations. Here the subject is asked to indicate how many of the blocks shown touch each block in the group. For example, the block "A" is in contact with five other blocks; hence the subject should record "5" next to the letter "A." The block "B" is in contact with four other blocks, and hence the subject should record "4" next to the letter "B." This again illustrates the ability to deal readily with two or three dimensional problems.

One of the simplest tests for the word fluency factor (W) requires the subject to write as many words as he can think of which have some specified prefix or suffix such as "end" or "tion." Another test for this same fluency factor is shown here. In the first column the given letters in each row can be rearranged to form the names of well known American cities. A similar test for this factor is to ask the subject to write as many words as he can think of which begin with a specified initial letter, or to ask the subject to think of as many words as he can for things to eat and drink, for example. In all these tests you will find great individual differences. Some people keep right on going because they can think readily of words in the required context. Others will think of half a dozen words and then have a "blocking."

The verbal comprehension factor (V) may be tested in many ways. In one test the subject is given sets of five proverbs. Four of these proverbs have essentially the same meaning, and the fifth one has a different meaning. The subject is asked to check this odd proverb in each set of five. In the first set of those shown in the illustration, the fourth proverb is different from the rest. *(Continued on page 50)*

By WALDEMAR SCHWEISHEIMER



Clothes Make the Woman—Shiver

HAVE you ever noticed how seldom a man and his wife agree on what is the proper temperature for a room? If you've been wondering whether or not there is a difference in the natural body heat of men and women, the answer is no—skin temperatures are the same for both sexes under the same circumstances.

Dr. C. P. Yaglou of the Harvard School of Public Health recently made an investigation of this subject. He discovered that the reason women shiver in a room that's comfortable for men is simply the difference in their clothing. Most of the women in the professor's survey found a temperature of nearly 76 F. the most comfortable, while at that point the men were sweltering—and howling. When men and women were dressed alike, they were comfortable at about the same temperature. With a minimum of clothing, a temperature of about 84 F. was good enough for both sexes.

For purposes of study men dressed in women's summer clothing—weighing 1.8 pounds, including shoes, as compared with 5 pounds for men's ordinary summer wear. So dressed, the men demanded a temperature of 80 F., which was about the same as that preferred by women similarly dressed.

Then women were dressed in men's winter clothes, weighing 8.3 pounds instead of 2.6 pounds, the average weight for women's winter garb. The air temperature at which they said they were comfortable went down to 70.5 F. That's only 1 degree lower than the figure preferred by men wearing the same clothes.

Two of the most cold-susceptible women in the group, who shivered in a room of 70.5 F. when dressed in their customary winter clothes, felt comfortable at the same temperature after changing to men's winter clothes.

If women would dress in winter with clothes that are comparable in warmth to those of men, they would be comfortable at a temperature of about 70 F. instead of 76 F., and there would be less discord between husbands and wives in the matter of room temperature. Reversely, if men would take off their vests, coats and collars in hot weather, buildings would not have to be cooled much below 85 F. instead of to 76 F. or at least 80 F., as at present. Much of the difficulty now experienced with sharp temperature contrasts would be alleviated, and, incidentally, elimination of the double temperature standard would reduce the expense of heating and cooling buildings.

Women's dress in winter may be too light sometimes, but it has one big advantage: It can be regulated, much better than men's clothing, according to the actual need. A man who feels too warm is rarely in a position to remove his collar, vest and coat; he is hampered by the laws of social life. All he can do is to change his clothes entirely, which is too much fuss and bother for most men. The light clothing of women, however, needs but the addition of a jacket or a shawl and everything is all right.

So when you shiver, girls, instead of cussing the furnace just tell the man of the house: "Hand me down my shawl!"

Making Convalescence Pay

BILL ZOTTOLI of Quincy, Mass., has three more months to "sweat out" before he can rejoin his outfit.

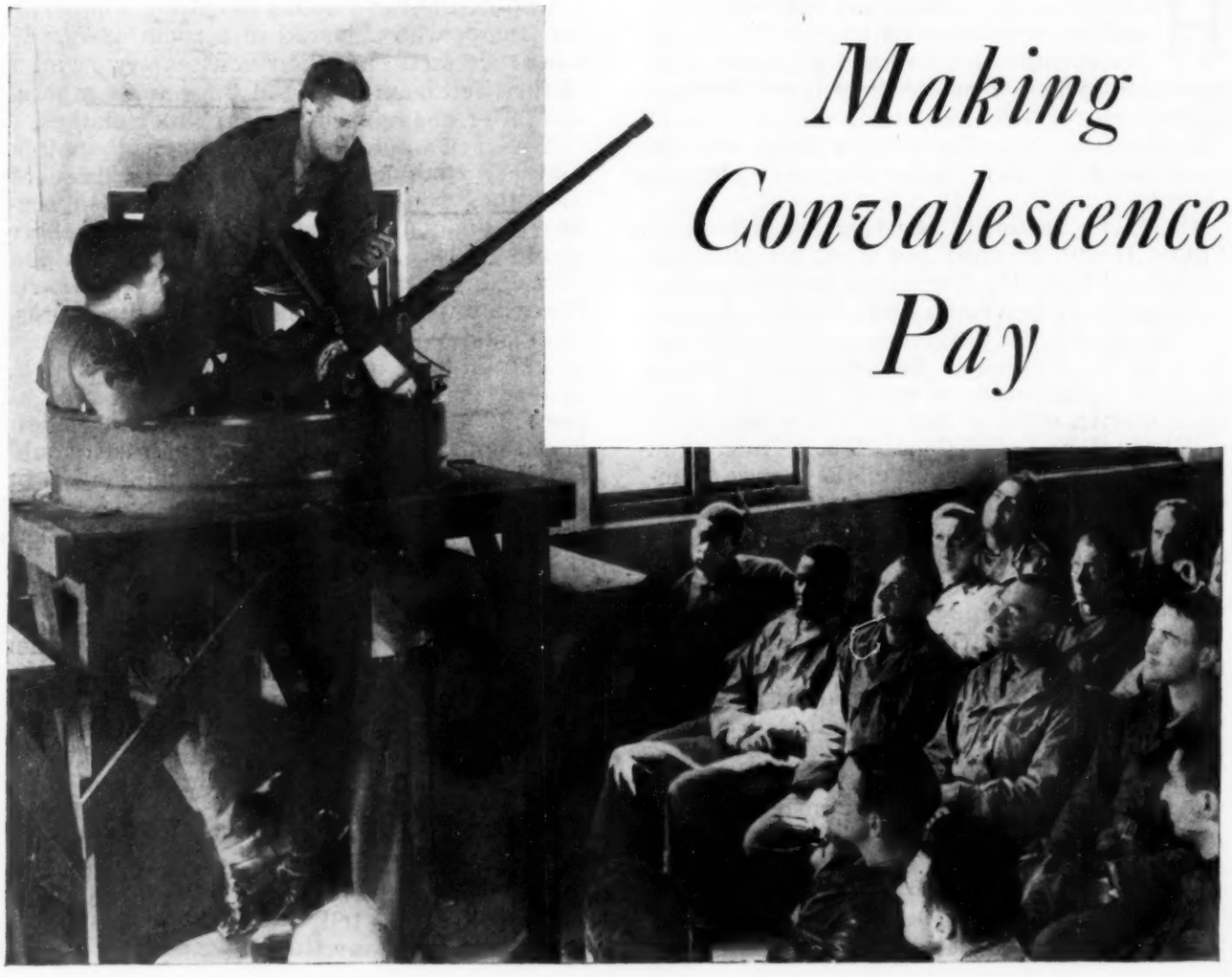
His entire mid-section encased in a plaster cast, Zottoli is recuperating at a U. S. Army Rehabilitation Hospital somewhere in England. He cracked three vertebrae when he parachuted from a crippled Liberator over Dover three months ago. Under the old hospital system, Zottoli would be lying in bed—counting flies or squares on the hospital ceiling—bemoaning his fate. The patients in this hospital are kept much too busy to allow them this needless luxury.

This rehabilitation hospital is unique in the annals of surgical history. It is one of many dotting the United Kingdom and is the result of a successful experiment by Maj. Gen. Paul R. Hawley, Chief Surgeon of the European Theater of Operations, United States Army. General Hawley found that with quick care and intelligent remedial treatment, four fifths of the soldiers wounded in action were able to return to their combat jobs.

Commanders of the units these enlisted men and officers are returned to are gratified to find that contrary to past experience, when a man who returned from a long stay in the hospital had almost invariably lost his "army knack," these men were coming back with a fuller understanding of their jobs, physically fit, better trained, more alert and, most important, not likely to make the same mistakes again. They were battle-wise.

The motto at these hospitals is, "Train while you recuperate."

Men discharged from base and general hospitals as walking cases are the material with which the rehabilitation hospitals do their work. An infantryman, his leg still in a cast, but able to walk; a flying gunner, chest swathed in bandages covering a rapidly healing flak wound; an engineer, machine-gunned on the beach at Normandy, his head bandaged 'round a crooked, happy-to-be-alive grin—these are the men who are recovering, who are training to be better soldiers during their stay at the rehabilitation hospital.



The program as set forth by medical experts of General Hawley's staff is a rigorous one—even for a well man. Despite that, these men, fresh with memories of their battle wounds, go through it with a will that is amazing. They know why and what it is for, and they want to get back to their outfits.

Patients are graded according to their physical limitations on entering the hospital. In the lowest grade their exercises and activities are strictly limited. As they improve, the amount of training increases until, finally, they go over obstacle courses, climb rope ladders and withstand gruelling ten mile hikes better than they did during their basic training periods. Special remedial exercises are prescribed to tune up muscles grown flabby and inactive. Complete check-ups are made each week, and soldiers are graded according to their improvement until they reach the top grade—ready for discharge from the hospital.

In addition to the physical tune-up, mental and occupational rehabilitation also take place. The Army Air Forces Convalescent Training Program has introduced many innovations to

By S. Sgt. WALTER ZIMMERMAN

Convalescent U. S. fighting men at rehabilitation hospitals in Britain get well faster and learn how to be better soldiers at the same time

rehabilitation work since its inception in the European Theater in September 1942. At that time it was decided to specialize training to a point where it would be more in keeping with the branch of service the patients were in. A flying gunner, for example, doesn't need the same type of training as a combat engineer. The physical build-up is the same for both, but their occupational therapy is as different as day and night.

General Hawley talked it over with Brig. Gen. Malcolm C. Grow, Surgeon of the United States Strategic Air Forces in Europe. They decided to introduce into these hospitals equipment and training facilities which would be specifically useful to Air Force soldiers. General Grow appointed an Air Force Rehabilitation Officer, who immediately instituted in

Physical reconditioning is adapted to each man's injury—and state of recovery—but all get some exercise

Here a group of convalescent soldiers is learning all about life rafts and their emergency first aid equipment

These soldier-patients will leave the hospital better prepared to cope with motor repair problems in the field

the already well organized rehabilitation program the more technical aspects of Air Force training.

The Air Force Surgeon's plan was to train these men under conditions which would best simulate those under which they worked. Flying Fortresses, Liberators and other types of planes were brought in for use as classrooms in the technical training program outlined. Link trainers, Sperry gun turrets, machine guns, air-ground radios and air sea rescue equipment were all obtained.

Air Corps Supply was dumbfounded at the requisitions. Who ever heard of a hospital needing a B-17 or a set of twin 50 machine guns? But they came through with the goods. In record time, classes were set up, competent, battle-wise instructors were secured and the training program was put into effect.

This training equipment, in most cases, came from air battles over the Reich, battle-worn but still serviceable. No longer fit for combat service, they are doing their part by helping in the training of these wounded men. Something the men learn here can save their lives when they return to active duty once more.

One of the most important pieces of equipment, the Link trainer, is used to keep pilots and navigators attuned to the delicate procedures involved in blind flying. All pilots must train constantly in the Link even while flying operationally. The trainer is used extensively by the patients, who are capably instructed in its intricacies by Sergeant Kyles of New York. He teaches instrument landing, radio procedure and simulated night flying and gives refresher courses in British beam systems as well as American radio navigation. All trainees receive individual instruction in the Link trainer two hours each week. Since the average stay in the rehabilitation center averages six weeks, most pilots and navigators leave with a better knowledge of blind flying than when they first arrived.

In the code classroom, six automatic keyers (instruments capable of sending different code messages at varying speeds) are in constant use. Radiomen maintain their speed and accuracy only by constant training and are inclined to grow rusty after a long layoff. A week away from the radio reflects itself in a marked reduction in the essential speed and accuracy so necessary to a combat radio operator.

Phonetic spelling (official Allied method used on combat air waves) is also taught. Many patients spend most of their spare time in the radio room. They tap out messages to each other in the weird jargon of the air, despite awkward arm casts, leg bandages and crutches.

For patients whose recovery is well under way, conditioning includes practice in the strenuous landing net

Air Forces officer lectures patients on strategy of air war. Regular courses like this are part of the program

The typical apathy and lack of interest often found in most hospitals are completely lacking here. Patients are kept busy with physical training, occupational and mental therapy, during the entire day. There is no time left for brooding and introspection. Their activities are designed to eliminate from their minds the cause of their hurt. *(Continued on page 43)*

Hypo-allergenic face creams

Applying modern scientific procedure to the formulation of cosmetics through the Hudnut Institute for Dermatological Research has enabled Richard Hudnut to produce hypo-allergenic face creams. In cases of allergy and sensitization, the physician may find it helpful to know that all Richard Hudnut products are composed solely of cosmetic ingredients which tests have proved to be least likely to cause unfavorable skin reactions.

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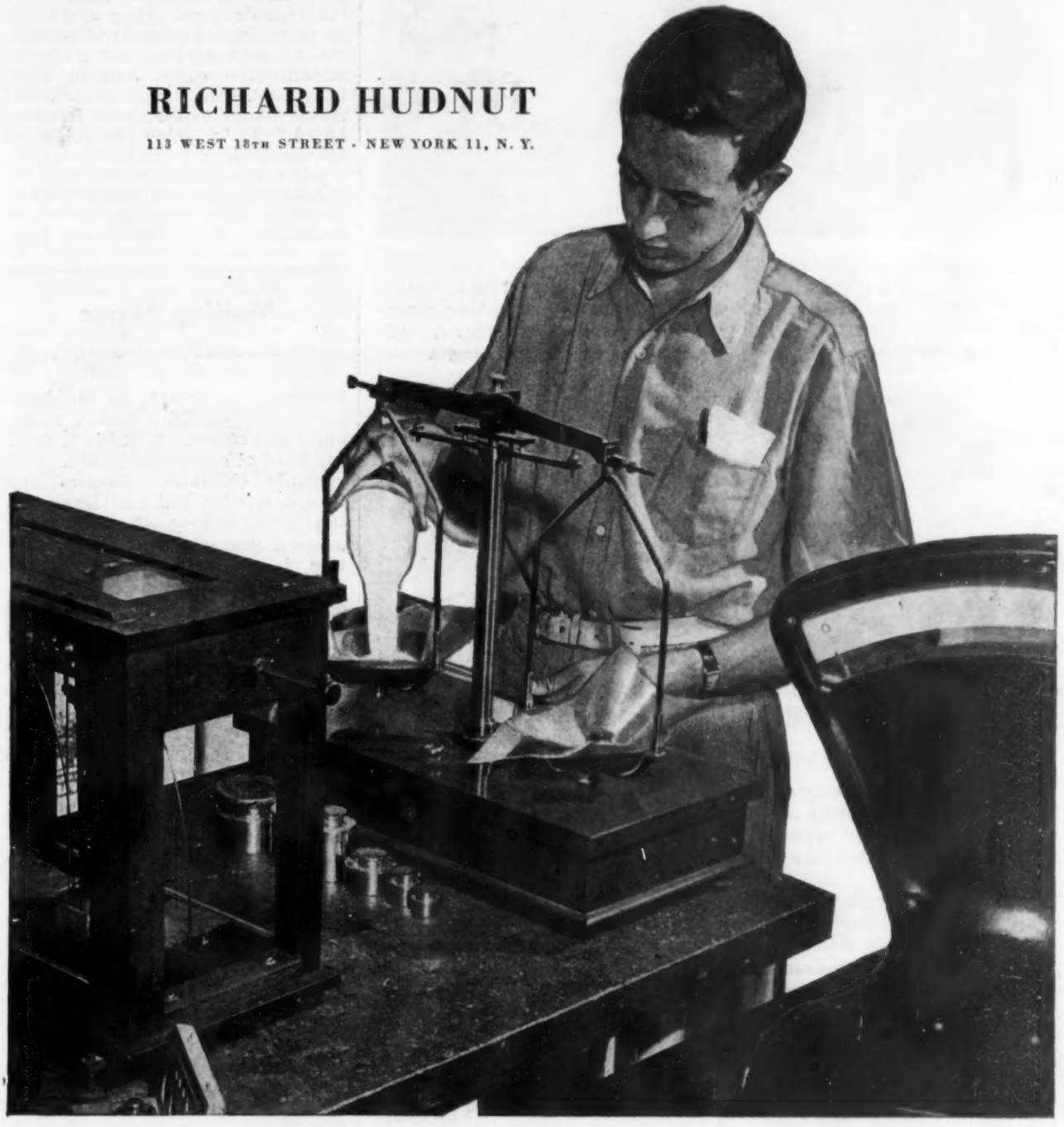

Laugh at a cold—and PNEUMONIA may laugh at you!

LOTS OF people think "it's just a little cold." But that little cold can use up a lot of your body's resistance against disease.

People who are already weakened by colds make easier targets for such serious diseases as pneumonia, influenza, sinusitis, tonsillitis, or bronchitis.

If you take the simple precautions below, chances are good that you won't be one of the thousands of victims of pneumonia this winter—or one of the countless victims of other frequent complications of respiratory infections.

1. **When a cold strikes** ...go to bed. At least stay indoors and rest *all* you can. It may help to take a hot bath, or soak your feet, and drink a hot lemonade before retiring. Avoid chilling.

2. **You must go to work?** Remember that you may inflict your cold on others. If you really *must,* then wear warm, protective clothing. Avoid drafts. Cover sneezes and coughs.

3. **Drink large quantities** of milk, fruit juice, and plain water. Take a laxative if needed.

4. **Treat that sore throat** to a gargle. For example, a teaspoonful of salt or bicarbonate of soda in warm water.

IF YOUR COLD seems more severe than usual, or if it starts with aching, chilliness, and fever, call the doctor without delay. Pneumonia may be indicated.

Most forms of pneumonia and certain other respiratory infections are often successfully treated with sulfa drugs—particularly if diagnosed early. Remember, sulfa drugs should be taken only when prescribed by a doctor.

But, *an ounce of prevention* is still worth a pound of cure. Try to avoid colds. Watch your diet. Don't skimp on sleep. Dress warmly and avoid chilling. Get regular exercise. And keep away from snifflers.

Metropolitan will gladly send you its free booklet, 15Z, entitled, "Respiratory Diseases."

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Air Borne Germs

(Continued from page 27)

beginning to equip themselves with such devices.

The question arises: If the sulfa drugs are so successful in preventing respiratory diseases—particularly such a scourge of youth as rheumatic fever—why can't they be administered to the civilian public as well as to the military? The answer to that question must await the discovery of some effective substitute for military discipline which can be applied to civilians. The sulfa drugs still have their inherent dangers. They can never be taken indiscriminately like aspirin or cold tablets, but must be administered daily, and in carefully controlled doses, under strict medical supervision, with frequent blood tests to watch the action of the drug.

But some of the lessons from the services' hugely successful control program will certainly be made available to the public before long.

Visiting Nurse

(Continued from page 31)

treatment of defects in children: nutritional, cardiac, dental, visual, aural and others. Syphilis is striking hard at adolescent youth. Preventable childhood diseases still take a terrible toll and leave victims with life-long afflictions. Only a small percentage of the population is properly nourished; undiagnosed tuberculosis continues as a menace to family health. The public health nurse is often the first to see and report these conditions. By the accumulated tabulations of her daily findings, charts are drawn which size up health conditions in a community. Trends may be gaged and studied and measures thus taken to improve the situation. This information is vital to public health, and the community nurse plays an important role in collecting it. Yet one third of the counties in the United States have no public health nursing service.

If you live in a community where this important branch of medical care is not represented, then there is a job cut out for some of your progressive citizens. The National Organization for Public Health Nursing, 1790 Broadway, New York 19, N. Y., will gladly give any help desired pertaining to the formation of a visiting nurse service in your community.

Making Convalescence Pay

(Continued from page 40)

The program also renews their contacts with their old jobs. It equips them to return to battle with sound bodies and wholesome outlooks. They are bronzed by regular ultra-violet ray treatments and are encouraged to remain in fresh air and sunshine. Class takes place outdoors whenever weather permits.

In addition to gun turrets and other weapons, patients are taught the care and use of life-saving equipment. There are classes in first aid, oxygen equipment, rubber rafts and electrically heated flying clothing. Actual operational equipment is used and is on display in the classrooms.

An interesting form of mental therapy which doubles as an instruction period has been successfully experimented with at this center. Many of the men wounded in action retain a certain fear in the back of their minds. Civilians call it "losing your nerve." Medical men have tagged it as "battle fear."

Patients are encouraged to relate their personal experiences in class and at the same time give the benefit thereof to their co-patients. Bill Zottoli, for example, tells his own story:

"We were coming home from a job over Germany when we hit a field of solid flak. Heavy enough to walk on. One burst kicked half our tail away. The pilot fought the stick but we kept losing altitude fast. We dumped guns and ammunition—anything loose, but we couldn't stay up there.

"As we hit the Dover coast, the pilot ordered four of us to bail out. I was first out. I kicked away from the ship at about thirteen hundred feet and pulled the rip cord.

"Nothing happened. I sure thought I was a goner. But I kept pulling at the pack until it finally opened at about three hundred feet and the silk ballooned over my head, pulling me up with a jerk. But I had been spinning so fast that I landed cockeyed—smack on my back—and busted it.

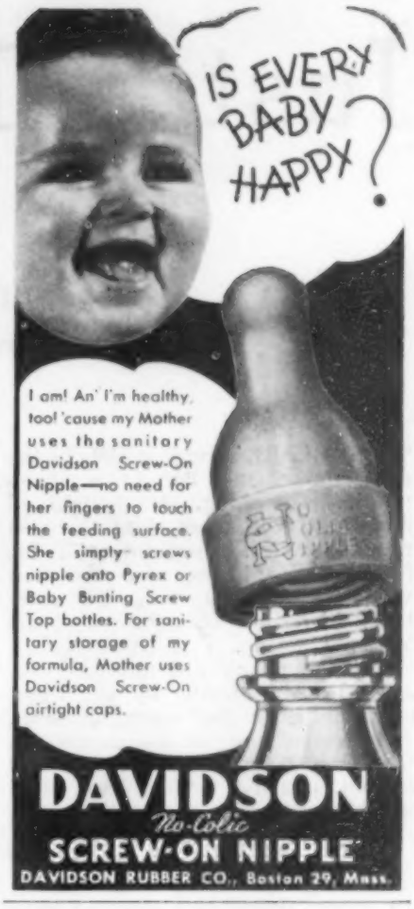
"The funny thing is this," he concluded. "Just that morning, I turned my pack in for inspection and grabbed the first one I came across in the chute shop. I never even stopped to check it. Next time, I sure will."

Zottoli still has a couple of months to wait until they chop away his cast, which is now covered with inscriptions by his buddies. But that doesn't prevent him from sitting in at radio sessions and gunnery classes. When he has the time, Bill works with the ground crew men, repairing a B-26 just outside the classroom. He won't fly again, but with his operational experience, he'll make an excellent instructor. His pupils will always be sure their parachutes are inspected—carefully! Zottoli wears the Purple Heart and Air Medal.

Only men who can be returned to operational duty are sent to these rehabilitation centers. Others, who are found unfit for further duty, are sent to special hospitals in the United States. Therefore, no civilian occupational therapy is practiced here. But the Red Cross, operating in close conjunction with the Army, adds a bright touch to the course.

Mrs. Glenn R. Douglas of Spooner, Wis., directs the spare-time activities of the patients. Many men returning from Normandy came back with only the clothes they had on their backs and what little money they had in their pockets. Until their pay vouchers come through, Mrs. Douglas sees that they are provided with adequate loans for spending money and new uniforms in the case of the officers, who must purchase their own. She also supervises the activities of the Red Cross Club, which includes courses in rug weaving, painting and arts and crafts work. Trips are arranged to local places of interest, and the men are encouraged to visit the surrounding countryside. Bicycle and horseback riding, tennis, boating and all forms of sports under the doctor's approval are arranged by her.

Once speeded on the road to recovery, officers and enlisted men share the rigors of calisthenics and full-pack road marches led by able physical training instructors. Men wearing casts clumsily push medicine balls around, play touch football and softball. The inmates of the gymnasium seem a strange crew of athletes with their casts, bandages and canes. A captain teeters back and forth on a rocker board on his cast-enclosed ankle. This is his remedial exercise to remove stiffness from the injured member. It will also speed recovery and will remove later difficulty in walking. A pilot-officer twists his arms this way and that on a ship's wheel attached to the wall. Another lies flat on a mat, gravely lifting his right leg once every thirty seconds. Elsewhere, men ride stationary bicycles, row in rowing machines and lift weights. No man is forced beyond his ability, and each man is encouraged to build up his injured muscles through sound exercise.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Just a Trace

By MIRIAM ZELLER GROSS

These "trace minerals" are needed in the body only in minute quantities—but they *are* needed

JEDD CLARK struck it rich in the Klondike and bought a sheep ranch in Montana. He bought all the latest equipment, had the best ranch for miles around, and his friends all said he was one man who was not going to throw away the gold he had brought out of the Yukon country.

But the ranch did not pay out. Jedd lost his lambs by the thousands. "Born the wrong time of year," said some of his neighbors. Others just shook their heads and looked puzzled. "It's iron sickness," said one oldtimer. "The sheep don't get enough iron."

Family finances were pretty well dissipated by the time Jedd's boy Jo came along, and the old man thought the boy better get a job somewhere and forget the ranch. But Jo said, "No, I like sheep." He also said that there were some things he wanted to try, and he believed he could make a go of the ranch.

Jo fed iron compounds to his sheep. But the lambs still died. "If it is iron sickness," he said, "maybe the folks at the University can find out more about it by studying tissues from these dead lambs. Maybe I'm giving them the wrong kind of iron."

Pathologists at the state university studied livers and spleens from Jo's lambs, and to their and Jo's surprise found them overloaded with iron. "Guess that proves the trouble isn't iron lack," said Jo.

"Wait a minute," said one of the Missoula pathologists. "There's a man named Underwood out in Australia who has just published something about cobalt deficiency causing a condition such as you describe among your lambs." Sure enough, the mineral cobalt proved to be the missing factor, and through this knowledge the Clark ranch and thousands of others are able to take care of war needs for sheep products.

While Hitler was busily chalking up his winnings in the late 1930's, Michigan and western Canada, as well as portions of the United States which border on this section, together with Florida, Australia and New Zealand, were learning the vital importance of unbelievably minute portions of certain minerals.

While nutritionists have recognized the requirements of both human beings and animals for iron, iodine and copper for a number of years, they are just beginning to learn the facts about such minerals as cobalt, manganese, zinc, silicon, fluorine and others of which our bodies have but a trace. We still do not know the functions of cobalt in human nutrition, though it may have some bearing on our use of sugars. Zinc and nickel are metals which may perform similar jobs.

Probably diet is best likened to an arch, with each stone selected to form a harmonious and solid whole. If any stone is lacking the arch is in danger of collapse. Our bodies are made up of cells, tissues and organs, and these in turn are composed of different chemical substances in different forms and combinations. Thus these chemical substances are highly important as they contribute the essential basic body ingredients. Among these are some thirty minerals, ranging from calcium, which comprises 2 per cent of our body weight, through phosphorus, salt, potassium, magnesium, sulfur, chlorine and iron down to minerals of which only a trace is found in body tissues or human milk. Among these "trace" minerals are iodine, copper, zinc, nickel, silicon, aluminum, fluorine, bromine, cobalt, selenium and boron. There is no set rule as to how minute the amount of a mineral must be before it is labeled "trace"; some nutritionists include iron in this classification. About .004 per cent of our body's weight is iron.

Nutritionists now know that trace elements, however minute the quantity, may have a special job to do, and that their absence may lead to ill health. They also know that too much of any one may also lead to ill health, even though they do not yet know the nutritional job performed by each trace element. Many of the trace elements have more than one job and often work in collaboration with vitamins.

The average good American diet probably contains an ample supply of most needed minerals—except calcium, phosphorous, iron, iodine and possibly copper. Inclusion of the so-called protective foods, such as fruits, milk, eggs and vegetables, in sufficient quantities, should assure sufficient mineral supplies, provided the cook does not use unnecessary amounts of water in preparing foods and then discard the water containing a large portion of the minerals, and provided also the foods are grown in soil which does not lack needed minerals.

Minerals are often referred to as the "body regulators," since they take part in all intricate chemical and physical processes going on within every cell in the body. While that is the general job of minerals, they also perform individual duties. For example, iron aids in making red blood cells, and iron deficiency plays a part in anemia. Iron also is needed for growth and reproduction, and for the digestion of food through assisting in its oxidation. Iron is lost if we are lacking in hydrochloric acid, because this digestive juice of the stomach helps separate the iron fractions from our food and change them into ferrous iron, the form which our bodies absorb. Iron may also be lost if our foods contain too much phosphorous or too little calcium. Phosphorous in the absence of calcium will unite with the iron and be eliminated by the intestines. Iron is usually found in foods which are red, yellow or green. Eggs, peanuts, peas, carrots, celery, onions, apples, apricots, bananas, cherries, peaches and molasses contain a form of iron which is readily available for body needs. The iron in potatoes, figs,

Infections—and the Proteins in Your Diet

Good resistance against infectious diseases is largely a matter of good nutrition, and especially of the protein content of the diet. When the diet is high in proteins of the right kind, the ability to resist infectious disease, to overcome it when it has set in, and to recover from it quickly, is considerably greater.* The proteins of meat are of highest quality, are THE RIGHT KIND for every protein need.

*Dr. Paul Cannon, of the University of Chicago, has demonstrated that a diminished protein supply in the diet lowers resistance to infectious disease. It affects the blood plasma from which the body produces the "antibodies" that govern resistance. Dr. Latham A. Crandall, Jr., of the University of Tennessee, in an article in the October 1944 issue of the Memphis Medical Journal, cites this statement by Dr. Cannon, and adds: ". . . the digestion of meat has been shown to be more complete than that of foods of vegetable origin." He adds the warning "a reduction in the protein content of the diet is rarely, if ever, indicated. On the contrary, there are many states [conditions of illness] in which an increase above the usual level of protein consumption is beneficial. The commonly held belief that protein restriction should be adopted in many types of disease is wholly without foundation."

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

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So, whenever the need for Bicarbonate of Soda treatment occurs in your home, use our Baking Soda with full confidence in its purity and value as a remedy. If Bicarbonate of Soda is prescribed for hyperacid types of indigestion full effect can be obtained by taking "Cow Brand" or "Arm & Hammer" Baking Soda. It is excellent to use as a cleansing gargle or to ease the pain of minor scalds and burns.

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grapefruit, pineapple and salmon is also easily utilized, but that found in ham, muscle meat and spinach is poorly utilized.

Our supply of copper represents considerably less than .00004 per cent of our body's weight, and yet we cannot utilize our iron unless this minute fraction of copper is available. Copper deficiency thus leads to anemia and other conditions of ill health which iron deficiency brings about. Copper is also needed to give healthy and pleasing coloring to the hair and skin. Chocolate, cocoa, molasses, whole cereals, apricots, Brazil nuts, mushrooms, pecans, walnuts and liver are good sources of copper.

Iodine is the chief constituent of the thyroid gland, and adequate supplies are necessary to help control body heat and activity. This trace element is needed also for normal development of height and growth. Iodized salt, brought about principally through the work of Dr. David Marine among Ohio school children, has gone far toward making iodine hunger a thing of the past both in this country and Europe. Dr. Marine and other scientists have also helped eradicate cretinism, a form of idiocy caused by generations of iodine hunger. Iodine needs are greatest during pregnancy, infancy and puberty. Since getting too much iodine may be as bad or worse then getting too little, iodine preparations should not be taken other than as directed by a physician.

Although silicon and fluorine enter into the composition of the bones and teeth, fluorine has generally been considered detrimental rather than good. About seven years ago Drs. W. D. Armstrong and P. J. Brekhus published the first paper which indicated that a tiny trace of fluorine is desirable, and reported that sound teeth contain more fluorine than do decayed teeth.

Fluorine is obtained through water rather than from our foods. But if water contains too much fluorine, a dental disease called mottled enamel may occur. Water passing through fluorine-rich mineral deposits may take on large amounts of the mineral, and children drinking this water during periods of tooth formation, particularly of their permanent teeth, are apt to get mottled enamel. In this condition, the teeth have dull, chalky-white patches, and often the entire tooth has a dead, unglazed look. The enamel may have small holes or pits and have characteristic brown stains. Too high fluorine concentration in drinking water is a public health problem

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which can only be solved by changing the community water supply, diluting the high fluoride waters or treating the water and removing the fluorides. Fluorine probably is of importance in the bones and teeth through its cooperative action with calcium and phosphorus, and in minute amounts it appears to limit the production of acids by bacteria in the mouth.

Boron is known to be necessary to plants. We do not as yet know that it is necessary for human beings or other animals, even though in small amounts it apparently exists normally in milk and in eggs.

Selenium is another element which occurs in body tissues but which has not yet been proved necessary. Selenium occurs occasionally in wheat and other vegetation. Animals eating it may be stunted in growth, lose their hair and get serious bone diseases. The "alkali diseases" and "blind staggers" reported among farm animals are thought to be caused by selenium poisoning.

The possibility of aluminum poisoning occurring because some of the metal is absorbed from aluminum cooking utensils has probably interested people more than the possibility that this metal may be needed to do some job within the body. Aluminum is absorbed from baking powders and other foods, but there is no indication that the small amounts absorbed are harmful. Neither do we yet have proof that aluminum is necessary for our well-being.

Manganese probably plays some role in growth and may have some bearing on fertility. Manganese, cobalt and zinc are so widely distributed in nature that there is small likelihood that acute or widespread deficiency in these minerals may occur, says Dr. E. V. McCollum, eminent food scientist of Johns Hopkins University.

We know little about our actual requirements for the trace elements. But knowledge is forging ahead, and the discovery of the cyclotron, or atom smasher, by Lawrence of the University of California is proving helpful in revealing the fate of trace elements in our bodies.

Serious diseases among farm animals have been traced directly to mineral deficiencies in the soil, and corrective steps have been taken. Now looming as important in postwar education are plans not only to teach people to select the right kinds of foods and prepare them properly but also to teach farmers to manage their soils in such a way as to insure foods of high nutritive quality for both their own tables and the market place.

ON THE THIAMINE VALUES of CANDIES

OF course candies are eaten because of their taste appeal, and because of the contribution they make to the joy of living.

But it is interesting to note that many candies—those in which milk, butter, eggs, fruits, nuts or peanuts are used—contain appreciable amounts of many nutritional essentials. The average values of vitamin B_1 of such candies are here shown.

Penny Candies—peanut squares, chocolate fudge, caramels, chocolate coated malted milk balls, and peanut butter rolls present 0.05 mg. of thiamine in approximately 2.04 oz.

Bulk Candies—peanut brittle and chocolate coated nut caramels, almonds, peanut clusters and raisins present 0.05 mg. of thiamine per 2.15 oz. (from 5 to 20 pieces, depending on the kind and size, make up this quantity).

Candy Bars—chocolate nut bars, peanut bars and the following types of chocolate coated bars: caramel, toffee, coconut, marshmallow, peanut butter, and nut roll present 0.03 mg. of thiamine in approximately 2.00 oz.

Packaged Candies—mixed, sold in pound boxes, present 0.04 mg. of thiamine per 2.00 oz.

It is noteworthy that the values of vitamin B_1 given compare favorably with those of equivalent servings of commonly eaten desserts.

THE NUTRITIONAL PLATFORM OF CANDY

1. Candies in general supply high caloric value in small bulk.

2. Sugar supplied by candy requires little digestive effort to yield available energy.

3. Those candies, in the manufacture of which milk, butter, eggs, fruits, nuts or peanuts are used, *to this extent* also—

   a) provide biologically adequate proteins and fats rich in the unsaturated fatty acids;

   b) present appreciable amounts of the important minerals calcium, phosphorus, and iron;

   c) contribute the niacin, and the small amounts of thiamine and riboflavin, contained in these ingredients.

4. Candies are of high satiety value; eaten after meals, they contribute to the sense of satisfaction and well-being a meal should bring; eaten in moderation between meals, they stave off hunger.

5. Candy is more than a mere source of nutriment—it is a morale builder, a contribution to the joy of living.

6. Candy is unique among all foods in that it shows relatively less tendency to undergo spoilage, chemical or bacterial.

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Testing Aptitudes

(Continued from page 36)

A large vocabulary is characteristic of this factor (V), and it is readily apparent that this factor is of fundamental importance in a wide variety of occupations. It should be noticed, however, that these two verbal factors that we have called "verbal comprehension" and "word fluency" are quite distinct. A person may have a large vocabulary and yet not be very fluent. Then again, a person may be quite fluent although his vocabulary is restricted. It is not sufficient merely to name these abilities "verbal." We know that there are several other verbal factors in addition to these two that I have described, and it is our expectation to identify them in experimental work which is about to be undertaken. It may be of passing interest that the word fluency factor (W) has been found to be negatively selective for airplane pilots—that is, men who make good pilots do not score well on tests for this factor. Apparently they are not as a rule a verbally fluent group of young men.

In one of a number of tests for the number factor (N), the subject has the simple task of checking each number in a series which is three higher than the number before it. Every one can do this task, but there are great differences in the speed with which people can do it. The number factor is very restricted. It is concerned with facility in simple numerical operations such as column addition. To be successful in arithmetical reasoning problems, such as those found in accounting, requires much more than this one number factor. Arithmetical reasoning in all its many forms is a complex of factors concerned with verbal thinking, number thinking, visualizing and verbal comprehension. The restricted number factor is simply a part of the complex of arithmetical reasoning.

One of many tests for inductive thinking is presented here to help illustrate what is meant by this factor, which is characterized by the ability to discover the rule or principle that underlies the material presented. The factor transcends the content of the material so that it is independent of the numerical, verbal or spatial nature of the task. In this test, which is called Letter Grouping, the subject is asked to examine the four groups of letters in each row and to discover something which is common to three of them. He is asked to check the odd group. The test shown here starts with the simplest items. In the first row there are three groups that have three letters "A" which are adjacent. The second group should be marked, because it is the odd group. In the last row of letters in this test, we might start with the hypothesis that two letters are identical in each group, but that hypothesis fails because this is true for all four groups. So we try again, and find that the first three letters in each group are in alphabetical order except in the first group. So we mark the first group as the odd one. Each line calls for a new hypothesis.

Visual closure is a phenomenon which has been investigated by the German gestalt psychologists. By closure we mean the ability to get a synthesis out of a diffuse presentation, so that it becomes unified. Instead of seeing disorganized and discreet parts of the presentation the subject perceives the presentation as a unified whole. This unification frequently happens suddenly, and the phenomenon is called closure. People differ remarkably in the ability with which they can unify the material that they are working with into a complete whole. In the simple test on page 34, the subject is asked to read the words. The first item is evidently the word "bread" and the next is "artist." The next word is "pistol." You might look at this word as though it consisted of a haphazard arrangement of spots. That would mean the absence of closure. When the spots become unified into a single perception we have closure. Of course, we are not specially interested in knowing whether the subject can read mutilated words. We are interested, however, in the facility with which the subject can form good closure, and this simple test is one of many in which this ability is revealed. In the next illustration we have a few examples from a test in which the subject is asked to identify each mutilated picture. This is also a test of perceptual closure. The first picture, for example, is a horse and buggy.

In another of the tests shown here we are dealing with two abilities. At the top of the picture are two geometrical figures. The subject is asked to determine which of these two figures is contained in each of the following, more complicated figures and to draw that figure. As you will notice, each of the large figures has a definite configuration of its own. In order to do this task the subject must break up the given figure so that he can see the required figure. This task requires, then, two operations—first, the process of destroying the presented configuration, and, second, the process of seeing a new configuration. The firmness of a configuration is known as "Gestaltbindung." To do this task successfully the subject must not only have the ability to form a closure readily but he must also have an additional ability—namely, flexibility in manipulating the configurations. One authority has described reasoning as the ability to destroy a given configuration so as to think of a better one. These are the abilities that we are trying to appraise by tests of this sort.

It should be emphasized here that these tests are not the conventional kind of intelligence test with which most people are already familiar. Some readers will be glad to know that there is no relation between these closure tests and intelligence as ordinarily estimated! We are dealing here with mental abilities that are not ordinarily represented in the estimates of general intelligence.

A study was completed in our laboratory last year on the auditory aspects of closure. We found that in the field of hearing the same closure effects are operating that have been discussed here in the field of vision. There are great differences among people in the ability to understand speech when it is distorted, for example. This is analogous to the visual closure tests which we have just presented. We are not dealing here with auditory acuity as determined by the audiometer. Two people may be comparable in ordinary hearing tests yet differ tremendously in their ability to understand distorted speech or in their ability to hear something in spite of distracting noises. If you can understand a person across the room in spite of distracting conversation near by, then you have this closure factor.

A simple example of auditory closure is the ability to learn the telegraphic code. About one fourth to one third of the general population finds it very difficult to learn. Two years ago we constructed an aptitude test for code operators. This was a test of code learning and code recognition in which we featured auditory closure. Selection of code operators by their scores on this test can reduce the failures to less than 5 per cent. Tests of this kind are superseding the simpler code aptitude test designed in the last war, which has been in use until the present time.

A few items from a test of mechanical aptitude are also presented

"Won't Jimmy come back—ever?"

Diphtheria's first choice

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Diphtheria's death rate—highest among children under five—could be wiped out entirely if all babies were properly immunized.

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That's why doctors say the importance of early immunization cannot be overemphasized.

If your baby is 6 months of age, he is old enough *now* to be taken to the doctor for immunization. *Don't* make the mistake of waiting until there's an epidemic. Diphtheria immunization requires time to take effect.

Besides, tiny children without immunity are in danger, not only from known cases, but from diphtheria *"carriers,"* or persons who may have the disease in a form so mild that it is not recognized or suspected. See your doctor *today* about your baby's diphtheria immunization. At the same time ask him for an Immunization Record Card.

Immunization Record Card

With this Immunization Record Card, you can make sure *now* that your child—whatever his age—has *all* the immunization he needs for protection against preventable diseases.

This card shows you *what diseases* your child should be immunized against, and at *what ages*. It's your child's Safety Card!

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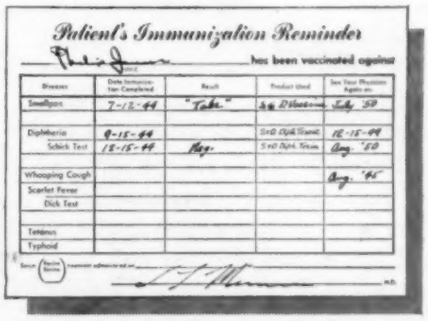
Don't trust your memory. Join the Mothers' Immunization Reminder Club, now totaling over 2,300,000 members. All you have to do is ask your doctor for an *Immunization Record Card*. This card will tell you *what* diseases your baby can be immunized against . . . and remind you when to take him back to the doctor for additional immunization or re-immunization.



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Diseases	Date Immunization Completed	Result	Product Used	See Your Physician Again on:
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Schick Test	12-15-44	Neg.	5:1 Dpt. Toxoid	Aug. '60
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in one of our illustrations. This helps explain one aspect of perceptual function that has not yet been adequately explored. In order to answer the simple questions on these figures, the subject must be able to visualize the simple mechanical devices and he must also be able to visualize the movement of these objects. It is probable that mechanical aptitude consists to a large extent of visualizing ability and perceptual closure, together with the ability to imagine constrained movement.

There have been a number of applications of our knowledge of these factors in the selection and training of people for specified jobs. For example, in training people to become draftsmen it has been found that a fairly large proportion of the population has considerable difficulty in learning projection and similar spatial ideas. Most of the failures in such training can be avoided at the start by selecting people who do well on tests involving the space factor and the closure factors. This is a rational procedure, as contrasted with the usual procedure of trying all sorts of tests and determining by crude methods which tests work best. In problems of this kind we can arrive at a solution rationally to the extent that we know something about the mental faculties that are involved.

In this connection I might mention that the problem of mechanical aptitude has not yet been completely solved. We know that the space factor and the closure factors are involved, but we have not yet identified the factors concerned with the visualizing of movement which are undoubtedly involved in mechanical aptitude. It is worth emphasizing also that we should not talk about mechanical aptitude as though it were a single ability. It is much more likely to be a complex of abilities. We have the methods for investigating this problem, and we hope to identify several additional factors which help determine mechanical aptitude.

The final illustration shows what we mean by describing a person's mental endowment as a profile instead of by a single index such as the intelligence quotient. Under each of the profiles on page 36 we have listed the occupational interests of the subject. The subject in the first profile expressed an interest in modern and classical languages. This profile is high in the two verbal factors and in reasoning. The second profile is high in immediate memory, which is a useful ability necessary in such skills as shorthand and receiving the

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telegraphic code. The third profile is high in the visualizing or space factor and in induction. This is typical for students of engineering and physical science. The fourth profile is highest in word fluency, which is consistent with this subject's major interest in writing and in commercial interpreting. Musical ability and artistic ability are both complexes of complexes that have not yet been analyzed by the factorial methods.

In counseling young people about their vocational choice we should be careful not to insist on sending them into those occupations in which they would be most typical. Many men are successful in their professions simply because they are not typical. The law student with technical aptitudes might excel in patent law or in dealing with legal problems with technical content. A student with interest in physics might become conspicuously successful in medicine by developing x-ray equipment and other applications of the physical sciences in medicine. We should have an explicit policy of encouraging a wide variety of mental types in each profession so as to insure competent talent to deal with the thousands of problems that overlap several professions or sciences. The same principle holds for some of the skilled trades.

In presenting this brief description of the principal or primary factors that have been identified so far it is not my intention to imply that this list is in any sense complete. Many other factors remain to be identified not only in the intellectual realm but also in the description of the dynamic system that constitutes personality. However, even with the present list of primary mental abilities we are able to describe mental endowment for educational and vocational purposes much more adequately than we could a few years ago when such description was dominated by the intelligence quotient. This work is not only consistent with the scientific object of identifying the distinguishable mental functions, but it is also consistent with the desire to recognize every person in terms of the mental and physical assets which make him unique as an individual.

Answers to Problems

HAND TEST—Top row (starting at left): L, R, L, L, R, L, L; Middle row: R, R, L, R, R, L, R; Bottom row: L, R, R, L, R, R, L.

FLAG TEST—Top row: Fourth flag from left is same side as first flag. Second row: Third and fourth flags same as first. Third row: Third, fourth and fifth flags same as first. Bottom row: Second, fourth and fifth flags same as first.

BLOCK TEST—A touches 5 other blocks; B, 4; C, 5; D, 6; and E, 4.

WORD FLUENCY—Vehicles: wagon, carriage, cart, van, auto, train, buggy, truck, sled, locomotive, sleigh and bicycle. Cities: Chicago, Pittsburgh, Toledo, Cleveland, Buffalo, Louisville, Milwaukee, Seattle, Minneapolis, Washington, Detroit and Richmond.

PROVERBS—First group: The fourth proverb is different from the others. Second group: The second is different. Third group: The first is different.

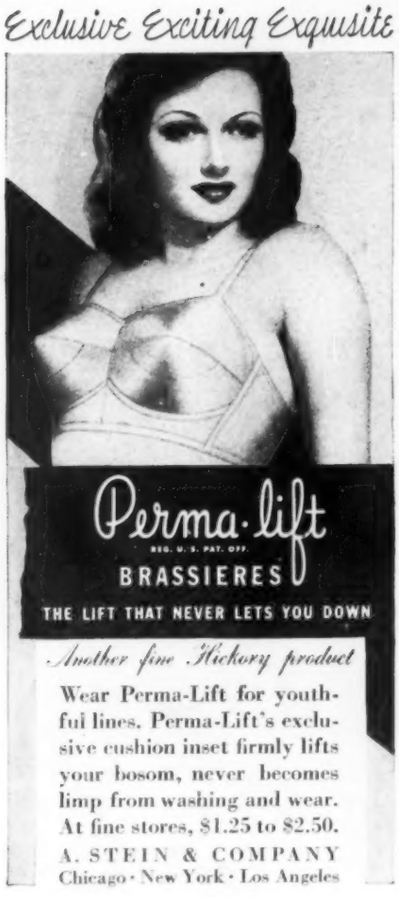
LETTER GROUPING—Top row: Second group from left. Second row: Fourth group. Third row: Second group. Fourth row: Third group. Fifth row: Second group. Sixth row: Fourth group. Seventh row: Third group. Bottom row: First group.

BROKEN WORDS—First column: bread, artist, pistol, pickles, sweater, window, blanket, highway, college, chicken, picture, rabbit, radio. Second column: motor, lamp or lump, sugar, letter, ruler, husband, candy, rubber, hammer, water, cabin or cubic, turtle, piano.

MUTILATED PICTURES—Left to right: Horse and buggy, locomotive, woman at laundry tub.

GEOMETRIC FIGURES—The left hand figure in the second row contains the first of the two figures shown at the top; the middle figure below contains the second of the top figures; the right hand figure below contains the first one at the top.

MECHANICAL APTITUDE—First test: (1) B; (2) A; (3) yes; (4) yes; (5) 2; (6) 4. Second test: (1) 2; (2) no; (3) 2. Third test: (1) 1; (2) 2; (3) 2.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X-Rays

(Continued from page 19)

lower half, either disease may and rather frequently does involve the other part. This is also true of every other disease; from location alone, the doctor cannot diagnose with accuracy the nature of the disease. It must be remembered that the shadow cast on the fluoroscopic screen or the x-ray film is viewed with the naked eye. Thus the area of disease which casts the shadow must be sufficiently large to be seen with the naked eye if one were to view the lung directly. On the other hand, the *cause* of disease in the lung is always microscopic, whether it be particles of silica dust, tubercle bacilli, cancer cells, fungi or pneumococci. These can be seen only under magnification—that is, by the microscope, and, therefore, it is unreasonable to hope that man will ever be able to determine the microscopic causes of disease by a naked eye method—the x-ray.

In recent years a few persons have become overenthusiastic concerning the possibilities of the x-ray in the control of diseases of the chest. They have even recommended that practically every other phase of examination be eliminated and that diagnoses be made entirely from looking at x-ray shadows. The same persons have advocated that the tuberculin test (which identifies the presence of tubercle bacilli in the body whether or not there are any symptoms of disease) be eliminated in favor of x-ray inspection. Actually, x-ray is in no manner a substitute for the tuberculin test; they are absolutely different phases of examination. Both serve only as screens: The tuberculin test to screen out those who have living tubercle bacilli in their bodies and the x-ray inspection of the chest to screen out those who have visible lesions in their lungs, which may be due to any of a number of diseases. When such persons are screened out the third phase of the examination is used in making the true diagnosis; it consists of laboratory and clinical methods much more difficult and extensive in their application than either the tuberculin test or the x-ray inspection.

The organs of the abdomen, being composed of soft tissue, could not be outlined satisfactorily on the fluorescent screen or the x-ray film. Barium sulfate, which is harmless to the body, was found to have the quality of obstructing x-rays. When it was mixed with milk, water or cereal and swallowed as food or drink in sufficient amount it cast a shadow the exact shape of the stomach. This aided greatly in detecting masses growing inside the stomach, such as cancer, and also in locating ulcers in the wall of the stomach. It also helped a great deal in studying the esophagus, as the barium will not readily pass such constricted areas. Then, barium passes from the stomach into the small intestine and makes it possible to see the various outlines of this organ. If one wishes to inspect the colon, a barium enema is administered and irregularities in its wall are readily visualized.

Since the bronchial tubes and their ramifications cast only faint shadows, one is rarely able to obtain much information concerning them from x-ray inspection. However, in 1921 doctors introduced an oil to which iodine had been added into the trachea and the bronchial tree. The iodine obstructs the x-ray and thus gives a clear outline of the ramifications of the bronchi, just as the barium mixture permits a view of the gastrointestinal tract. In such diseases as bronchiectasis and lung abscess, the oil clearly shows the enlargements of the bronchial tubes or even accumulates in the abscess cavities. Again, if a bronchus or some of its larger ramifications has been obstructed by disease or mucus plugs, the iodized oil does not pass this point and, therefore, evidence of such obstruction is gained. The iodized oil contains in the neighborhood of 40 per cent iodine. When this is introduced into the bronchial tubes, the iodine is liberated so slowly that it causes no harm.

Despite the truth that one cannot diagnose disease with any degree of accuracy from shadows seen in the fluoroscope or on the x-ray film, the fact remains that the chronic diseases usually cast shadows long before they cause symptoms or can be detected by the usual physical examination. Therefore, inspection of the chest by x-ray is far superior to all other phases of the examination in locating areas of disease in the presymptom stage. This is of extreme importance, for diseases are most treatable before they have become large or have caused much destruction. For example, primary cancer of the lung, which is now recognized as a rather common condition, can be treated successfully only by total removal of the lung, but this must be accomplished before the cancer cells have become dislodged and disseminated to other parts of the body through the lymphatic and blood streams. A small shadow cast by x-ray, although it does not betray the actual condition, may lead to the diagnosis of cancer before there are any symptoms and while the condition is confined to a small area. Again, in the case of tuberculosis a small x-ray shadow may lead to the diagnosis of this disease before it causes any symptoms and before it becomes contagious. Indeed, chronic tuberculous lesions may cast x-ray shadows two or three years before there are any symptoms or abnormal signs and before the disease is contagious. Adequate treatment administered in such cases usually controls the disease and prevents it from causing illness or from spreading to others. Conditions within the heart and aorta which cause change in the size and shape of these organs are readily detected by their x-ray shadows. Foreign bodies which are "swallowed the wrong way"—that is, enter the trachea rather than the esophagus—can be located by the x-ray shadows they cast if they are of dense composition. Metal objects like the cap of a pencil or a pin are easily detected, whereas organic material such as foods that do not contain bone are usually not visualized by x-ray. However, they do create certain changes which usually inform the doctor as to which bronchus contains them.

The fluoroscopic inspection has certain distinct advantages: First, one visualizes the image of the diaphragm in movement, and it is therefore possible promptly to detect limitations of movement on one or both sides. One also visualizes the heart with reference to its position, its size, its shape and the rhythm of its beats. A good view is obtained of abnormal shadows which may be present in the lung. Indeed, by moving the chest and the fluoroscopic screen, one is able to visualize much more of the lung than is possible with the x-ray film. Often the inspection made with a special fluoroscopic unit is superior to the x-ray film from the standpoint of finding small lesions in parts of the chest ordinarily obscured from view on the x-ray film. Another advantage of the fluoroscope is that it is the most inexpensive method of inspecting the chest. As it is used today its only disadvantages are that it is tiring and monotonous for the physician, and a permanent record—that is, a photograph of the images—is not made for subsequent inspection and study.

Many workers prefer x-ray film inspections because films can be preserved and the shadows compared with those of the same chest made subsequently. It is estimated that approximately 50 per cent of the population of the United States

This Year of 1945 May Not Be An Easy One

Much of the work that America has been doing during the past three years will have to continue. Whether the war ends during 1945 and the period of world reconstruction begins or not, the tremendous energy output in industry and on the farm will have to go on.

One of the lessons America is taking into 1945 is the importance of good nutrition. Only a well-nourished nation can accomplish what has been done here.

Breakfast plays an essential part in good nutrition. When breakfast is adequate, the day is given a better start; work goes along better, whether it is done in an office, at school, or in a factory; untimely morning fatigue is lessened, and industrial accidents do not occur so frequently.

If your and your family's breakfast is the meal it should be, you know you are going to face the day right. If the morning meal is skimpy or skipped entirely, you have much to gain through correcting this habit.

Start with this basic breakfast—fruit, cereal with whole milk and sugar, bread and butter, and a beverage. As you become accustomed to "morning eating," breakfast—if more is required—is easily made adequate by adding other foods.

What nutritional value your dish of cereal—1 oz. of cereal (whole-grain, enriched, or restored to whole-grain values of thiamine, niacin, and iron), ½ cup of whole milk, and 1 teaspoonful of sugar—gives you is shown in this table.

Calories	**201**
Protein	**7 Gm.**
Carbohydrate	**32 Gm.**
Fat	**5 Gm.**
Thiamine	**0.19 mg.**
Riboflavin	**0.27 mg.**
Niacin	**1.82 mg.**
Calcium	**158 mg.**
Iron	**1.73 mg.**

The presence of this seal indicates that all nutritional statements in this advertisement have been found acceptable by the Council on Foods and Nutrition of the American Medical Association.

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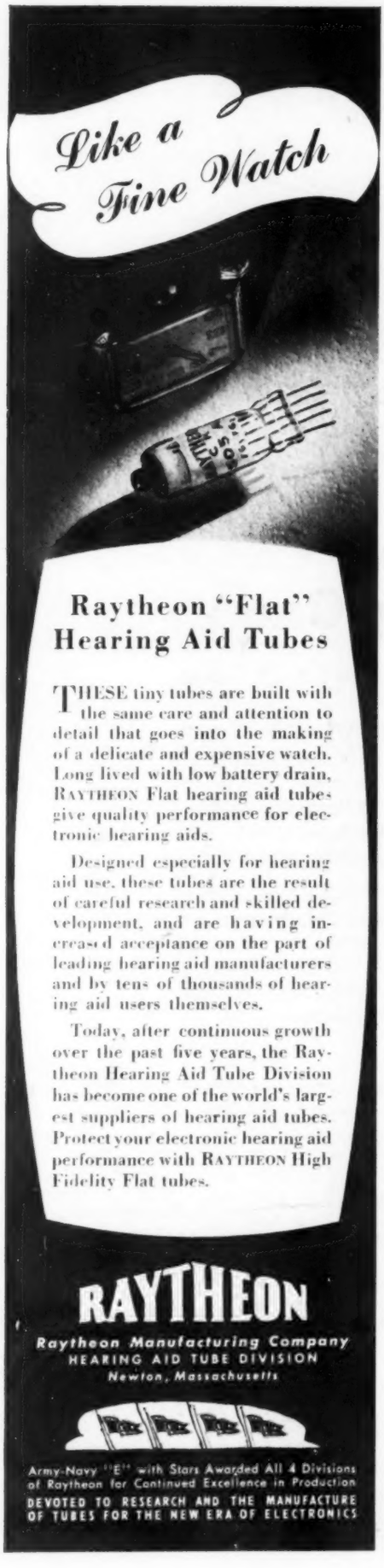
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is infected with tubercle bacilli; to screen out those with x-ray shadows which might be due to tuberculosis, it would be necessary to make x-ray film inspection of the chests of approximately 65,000,000 persons. Tuberculosis is of such a nature that its absence on one date, as far as x-ray inspection is concerned, does not guarantee that it will be absent in a year or at any subsequent time; inspections must be made periodically. On first consideration, this seems like an impossible task, but it is the only solution of the tuberculosis problem. In the past it seemed impossible because of the tremendous cost; many of us remember when an x-ray film of the chest cost the patient $25 to $35, and even if it were only $10 or $5, one could hardly have hoped to inspect the chests of 65,000,000 persons in this manner every year.

When the true value of x-ray inspection of the chest in determining the location of areas of disease was recognized, it became obvious that every one in adult life, particularly those who react to tuberculin, should be so inspected. Seeing the great need and the impossibility of meeting it by old methods, active minds went to work, and soon a rapid x-ray camera was in the field, making exposures of the chests of persons at the rate of two to four per minute. One such camera was capable of making exposures of the chests of 1,000 persons daily. This method was introduced in 1932. The film for this camera was prepared in rolls similar to those used in a camera for taking snapshots, but each roll contained enough film for one hundred exposures. When the entire film was exposed, it was developed by one process in approximately one one-hundredth of the time required to develop the same number of exposed films by the old method. A special device was then made in which the developed film could be unrolled mechanically by hand or by electricity while the shadows were being inspected. This reduced the handling of films to about one one-hundredth of that in the old method. The rapid method of making x-ray films has progressed and today these superior films are exposed, developed and delivered to the physician for description of shadows quickly.

After the invention of this rapid and inexpensive method of making x-ray inspections of the chest, a doctor in Brazil presented an even less expensive method, which consists of using a first class camera with 35 millimeter film to make exposures of chest shadows from the fluoroscopic screen. This minute film must be viewed with a magnifying glass or projected on a screen for inspection of shadows.

Later, films of 4 by 5 inches were introduced, and now those of 70 by 70 millimeters are being employed. They are exposed from the fluoroscopic screen and developed in the same manner as the 35 millimeter films. These can be viewed with little or no magnification. They are made for viewing in a stereoscope not greatly different from those commonly seen in the parlors of homes a quarter of a century ago. This enables one to view the chest shadows in three dimensions. Small films made from the fluoroscopic screen are known as photofluorograms and can be exposed at the rate of 1,000 or more a day per machine. The film itself costs only a few cents, but processing and reading is little, if any, less expensive or time-consuming than when standard size films are used. Therefore, the total cost is not as small as it seems at first thought. Moreover, photofluorograms are not entirely satisfactory, as experience has shown that they fail to reveal some small areas of disease which are visible on standard size films. Again, shadows described on photofluorograms may prove to be apparent rather than real. When questionable or definite shadows are present, it is thought best to "reray" on standard size films, even though the abnormal condition cannot be diagnosed by shadow alone. Nevertheless, shadow indicates the presence of some kind of disease, the nature of which usually can be determined by other phases of an examination. One advantage of photofluorograms is the relatively small storage space they require.

At the present moment there is considerable controversy concerning the efficacy of the various methods of making x-ray inspections of the chest. This is a healthy state of affairs, as controversy stimulates thinking that leads to experimentation, which in turn results in better procedures. The present x-ray situation leaves much to be desired, but there is good reason to believe that the immediate future holds new developments which will eliminate many of the present shortcomings. In the meantime, one should employ the best method available. Where funds and circumstances do not permit the use of films of standard size, certainly advantage should be taken of photofluorograms and even fluoroscopic inspection of the chest. In any event, the x-ray is only one phase of an adequate examination. To be most effective in the diagnosis of tuberculosis it must be used in conjunction with the tuberculin test, as well as clinical and laboratory procedures.

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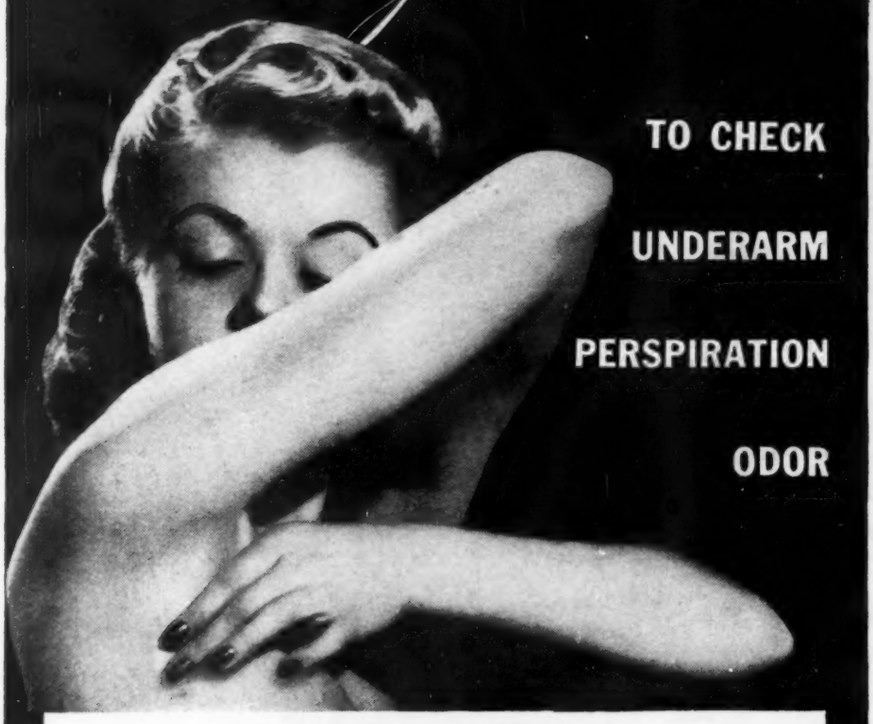

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QUESTIONS AND ANSWERS

Contact Lenses

To the Editor:—I have worn contact lenses (invisible eyeglasses) for a time but have had difficulty in keeping them on for over an hour without experiencing a burning, watering sensation. My eye doctor and also a contact lens fitter advised me to place in each lens along with my "buffer" solution, a drop of glycerin. This was supposed to provide more lubrication between the lens and my eye. I am anxious to have your opinion regarding the possible action of glycerin, over a period of time, on the eyeball itself. One doctor I consulted gave me the opinion that the glycerin might in time cause scar tissue on the eyeball.

California.

Answer.—The long continued use of glycerin when diluted as used in the buffer solution would have no effect on the eyeball itself. This has been proved by the experience of one outstanding eye physician who used solutions of iodine and glycerin for years in many hundreds of patients. It is probable that changing the buffer solution would result in longer continuous use of the contact glasses.

Circumcision

To the Editor:—Are babies usually circumcised at birth, or later on? Also, do most physicians think circumcision is essential if the child does not have any difficulty with the penis? California.

Answer.—Circumcision is needed when the foreskin is too long or the opening is too small to permit retraction and adequate cleansing. The best time to do the operation is about one week after birth, provided the infant is in good condition. Preceding the operation it is advisable to determine the clotting-time of the blood to avoid unnecessary blood loss during surgery as well as to diagnose certain abnormal blood conditions.

Circumcision should not be done when the infant's general condition is poor nor when there is no need shown for the operation.

Dry Skin

To the Editor:—I have a very dry skin that is painful in the winter. I have always thought that lubri-

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HOME! There's no place like it. And nobody knows it better than a fighting man back on furlough. Ice-cold Coca-Cola is one of the comforts of home everybody welcomes. That's why frosty bottles of "Coke" belong in your home refrigerator. At the words *Have a "Coke"*, refreshment joins the party to make it gayer, brighter. The good old American custom of *the pause that refreshes* is spreading in many lands around the globe,—a symbol of our friendly home-ways.

It's natural for popular names to acquire friendly abbreviations. That's why you hear Coca-Cola called "Coke".

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Why look like this?

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You can *still* enjoy a hot, hearty mealtime drink—when you do as many doctors suggest: Drink POSTUM instead. Easy-to-prepare Instant Postum contains no caffein or stimulants—yet it's so full-bodied and flavorsome that many people who *can* drink coffee without ill effects *prefer* Postum.

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cating cream or oil was the one and only thing to be done about it. I have now been told by what I consider a reliable authority that if skin is lubricated daily the oil glands will cease entirely to function. I would appreciate your opinion. Ohio.

Answer.—The skin of man is normally kept moist and pliable by the secretions from the sweat glands and by the sebaceous glands, which force their secretion into the hair follicles. People whose skin is abnormally dry are apt to have a deficiency in the number of oil glands. The dryness is of course aggravated by the hot air and low humidity found in most of our American homes during the winter season. While pastes and paints may be sufficient to block the hair follicles, and they may be dangerous if they contain such minerals as lead, arsenic or thallium, there is no evidence that oils or lanolin products have any deleterious action on the sebaceous glands. Oily cosmetics have been used for countless ages. Most dermatologists consider their use beneficial.

Altitude and Sterility

To the Editor:—I would greatly appreciate your telling me whether high altitude flying causes permanent or temporary sterility and how long it would take for a condition of this sort to develop. New York.

Answer.—The effects of high altitude flying never bring about permanent inability to produce offspring nor even temporarily impair normal functioning of the sex glands, provided artificial aids such as supplementary oxygen or pressurized cabins—devices necessary even to sustain life itself at altitudes above 23,000 feet—are used to ward off cumulative fatigue.

While man's physiologic endowments best fit him for a sea level existence, it has nevertheless been conclusively shown that he can permanently adapt to any altitude up to but not exceeding 18,000 feet, where the atmospheric pressure (and the oxygen pressure) is only one half of that prevailing at sea level. Good examples of such extreme adaptation to environment and exposure to low oxygen are found in the Andes Mountains and on the Tibetan Plateau, where year after year the inhabitants live, work, play and raise families at altitudes from 15,000 to 17,500 feet without having to resort to supplementary oxygen or any other artificial aids. Within a very short time nature itself brings about the necessary physiologic adjustments.

Henry Bulbsnatcher's Last Prowl

Poor Henry! Caught in the act of snatching the last 150-watt bulb in the house to replace a burned out lamp in his workshop. Just when the family is walking in with a fresh supply of G-E Mazda lamps.

BULB SNATCHING DAYS ARE OVER!

It may have been necessary—or even patriotic—to switch bulbs from one socket to another as long as you couldn't get all the G-E lamps you needed. Of course the needs of the armed forces and war factories had to come first.

But today G-E Mazda lamp dealers have adequate stocks of most sizes and there's no reason to put up with empty sockets and wrong size bulbs. One word of caution, electricity is one of our vital war weapons—don't waste it.

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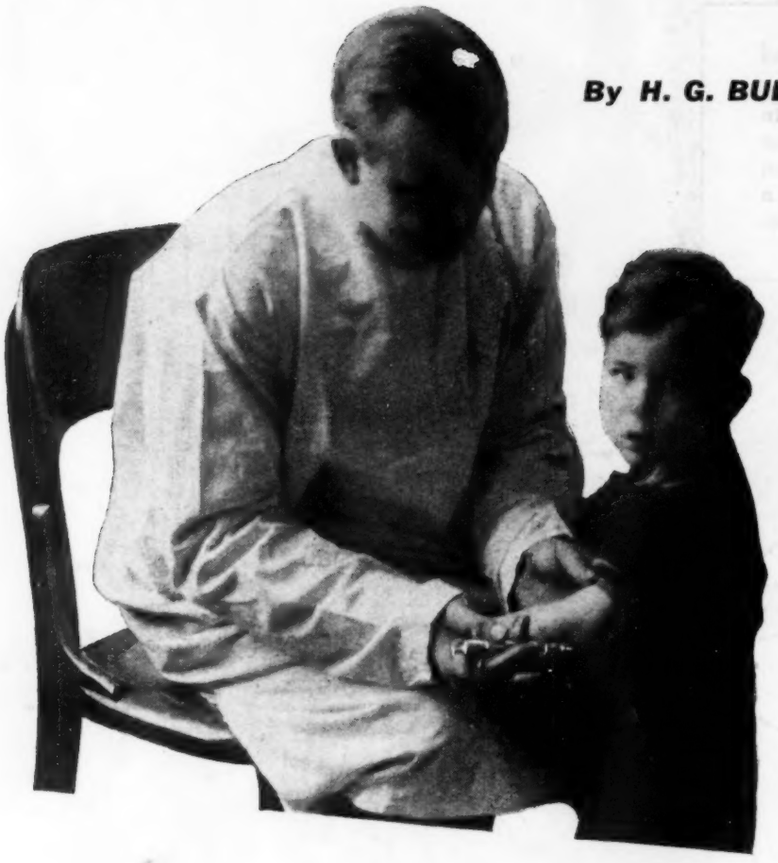

By H. G. BULL

Doctors and Parents Are Allies

SOMETIMES WE ALL pull up stakes, cast aside all reservations and responsibilities and go blithely forth to that mental Utopia of all who kick against the pricks of prejudice and long-established custom. I've just been on such a journey, deep into the devoutly-to-be-wished-for country where 100 per cent cooperation exists between parents and physician, with the result that all children have been protected against every disease they do not have to have!

One has only to glance at the headstones in almost any cemetery to see how children were swept away in the good old days, those poor little dozens who were undoubtedly shuffled off this mortal coil through agencies now well understood and to a great degree controllable. What were they?

Infant mortality used to be terribly high. Aside from poor hygiene and lack of refrigeration, with resultant food contamination and a train of dysentery, dehydration and death, there were first of all, of course, the once common deficiency diseases, rickets and scurvy. With the widespread knowledge of vitamins D and C, and the availability of cod liver oil preparations and oranges and tomatoes, there is no need to dwell on these today, but not so long ago their lack snuffed out the lives of many thousands of children through what was called a "general decline." In some places, children still suffer from these lacks; only a few years ago one could see a number of spindly, bowlegged children on the smoke-darkened streets of Glasgow, one of Britain's famous medical centers, and of course the war has deprived thousands of children of the food and care needed to avoid these ailments.

Another menace to children a generation ago lurked in the bovine form of tuberculosis. Through drinking unpasteurized milk from infected cattle, children often acquired scrofula, the glandular form, tuberculous meningitis and tuberculous peritonitis, and certain diseases of the bones caused by the same organism, or germ. These are rarely encountered now, thanks to the supervision of herds and the elimination of unfit cattle. Pulmonary tuberculosis has also been diminished greatly as a threat to children now that its early discovery, communicability, prevention and management are so well understood.

Still another considerable group of children's diseases can be eliminated largely through the medium of inoculation: diphtheria, smallpox, scarlet fever, whooping cough and typhoid. In certain regions other endemic diseases such as Asiatic cholera are also to some degree under control, and the prevention of tetanus or lockjaw by inoculation removes another hazard. Even measles may be modified by the use of recently developed means; the immunity wears off after a few months, but it is extremely useful for young children who have been exposed and who would doubtless have hard sledding with an attack.

Smallpox and diphtheria ought to be wiped from the face of the earth. Complete cooperation between parents and physicians could achieve this phase of the millenium almost overnight, but it will probably take many more years after our own generation to bring this desirable objective about. Scarlet fever could also be greatly reduced. The reason scarlet fever immunization is not so fully urged as diphtheria prevention is that several inoculations are required which often cause a considerable reaction. Moreover, tests show that a larger percentage of children are immune to scarlet fever than to diphtheria. The newer preparations for combating streptococcus infections, too, will curtail scarlet fever to a large degree. Finally, the public is not ready to accept too many health campaigns, even when they are all for its own benefit.

Typhoid fever, instead of being an ever present disease with special wards required for it in large city hospitals, has been reduced to a medical curiosity by immunization and through control and sterilization of water supplies and food and the recognition of carriers.

Whooping cough or pertussis is one of the most trying of all the diseases of childhood, from the standpoint of both the parents and the child. This scourge has carried off many children, particularly those about a year old, chiefly be-

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cause of complicating bronchopneumonia. The mucus which develops at the focus of the disease in the windpipe is by nature so sticky that only violent coughing will loosen and expel it. After the long spell of coughing which is so characteristic of the disease, the long, indrawn whoop is likely to be accompanied by the aspiration, or sucking, into the bronchial tubes of this infected mucus. Adults who have whooping cough state that during a paroxysm they feel as though they were never going to be able to breathe again. This explains the look of apprehension and terror which children have during a coughing spell. They are fighting for air. Well meaning parents who still hesitate to have their children immunized against whooping cough should bear this in mind. It is not the child who is at fault if one of these preventable diseases happens to land him in Elysian fields before his time.

Credit in this country for the development of a vaccine really effective against whooping cough goes to Dr. Louis W. Sauer of Evanston, Ill. This vaccine will prevent the disease in about 90 per cent of children and will so modify its symptoms in the small number who do acquire it as to make it a minor nuisance instead of a dangerous menace. How long the immunity lasts has not yet been specifically determined, for we have not had the vaccine long enough. But at least it performs a great service in postponing the disease beyond early childhood, when the danger is greatest.

It was ten years ago that I began to use this vaccine. Mine is one of the thousands of general medical practices with a large sprinkling of children—the setup of the average "family doctor." This happened to be a university community, where one would expect to find a high degree of interested and cooperative parents as well as a privileged and well protected group of children. A recent survey of these children, made possible through fine parental cooperation, covered 160 boys and girls who had the vaccine long enough to carry them through babyhood and into nursery school or the grades. In the interval covered this community has suffered at least two periods when the disease was prevalent.

Three main questions were asked of parents in the survey; these had to do with the reaction to vaccine, exposures and contacts, and the nature and severity of the attack if whooping cough was acquired. Although the parents are now about to write the remainder of this article, through their comments on the returned questionnaires, a brief summary should be given first. In this community there are always young couples working for an advanced degree at the university who leave after two or three years. Thus quite a large group had moved and could not be contacted. Still, out of 220 children who were immunized, reports came in covering 160. There were ninety-two definite exposures to the disease; these ranged all the way from one cough in the face to being confined for six weeks or more in the midst of a household where some other child had a hard, typical attack. Among the 160 children immunized, 18 were reported to have had the disease—11.3 per cent, none of them serious or in any way complicated. Five others had had suspicious coughs, but no diagnosis was made, so mild were the symptoms. Now mothers are the world's most reliable reporters, as any family doctor will tell you, when it comes to observing their own children, during illness as well as in health. The following replies by mothers, then, are significant:

To the first question, "Do you recall any ill effects of the vaccine when it was given?" only four reactions are worth noting. The following comment is typical of those made by mothers who observed some degree of discomfort following the injections:

"The only effects I recall were extreme soreness of the arm and resultant feverishness and petulance beginning about six hours after and lasting about twelve hours."

Compared to 156 negligible reactions there was just one in which the child was made ill. Her arms were discolored and much swollen following each injection, and she had considerable fever. Yet what is this compared to even a moderate siege of whooping cough?

The next group of replies well illustrates the type and degree of exposure. Sixty-eight had had no known exposure, and yet since six who got the disease never knew where it was acquired, one might suspect that exposure was much commoner than these figures would indicate.

"None of my four children ranging from 5 to 11 years of age have had the disease," one mother said. "However, the fifth child who is 2 years old and has not had the vaccine, developed a severe cold, coughing harder at night. The cough continued for three weeks."

"In Laurel, Miss., while we were living there, there were many cases of whooping cough, and a little boy coughed right in Anne's face," said

another. "At the present time, there are 49 cases reported here, and two friends of our three girls now have it."

"One child with whooping cough coughed in Carol's face the day before it was discovered. She was also playing with the neighbor's twins one day, and the next day we found they had it! Then another neighbor in our apartment had the disease and was around Carol before she knew it. So we feel she must be immune, considering such close contacts."

"Winslow was exposed three or four times. We feel that the first few times the vaccine protected him, but this summer (seven years after inoculation) the other two children had whooping cough, and finally he came down with it. Compared to the others, he had it only slightly."

"Betty had very light case—direct contact from a girl who was sure she didn't have it."

"Both the children were in homes where there was whooping cough, but neither of them got it."

"Nancy Anne contracted whooping cough the first of May. During the first week the nights were severe but at the end of a month all trace of the cough was gone."

"At end of a week he whooped once. The following week he coughed mildly, only a few real whoops. Third week he was apparently well."

"Lucille is believed to have had whooping cough, but inasmuch as she never whooped we were never completely sure."

"Peter had such a mild case that the doctor wasn't even sure he had it. There was some coughing for about two weeks and he vomited only twice."

"Both boys were thoroughly exposed during an epidemic when about two thirds of the children in school had the disease. As our boys usually take everything that comes along, I feel sure the serum protected them."

"During the school epidemic Dick and Carl got a cough that persisted for some weeks, although it wasn't severe. We don't know if it was a cold or a light case of whooping cough, but I suspect it was the latter and vaccine kept it from being more severe. The health inspector examined them and saw no reason to exclude them from school."

"Shirley was very thoroughly exposed but didn't get it."

"Both girls had whooping cough during the summer—both very mild cases. Neither one lost a meal nor was awakened at night with coughing."

"In the summer Martha was exposed just before we went camping.

HER mother is a marvelous mother, but a little inclined to cling to habits already formed. If her mind were just a shade younger, how much better she could understand her daughter's modern point of view . . . Take the subject of monthly sanitary protection, for instance, and the use of *Tampax*. Here the mother might well learn from the daughter, both being of "Tampax age."

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"His brother (not immunized) had whooping cough during the entire summer; Robin, though thoroughly exposed, did not get it."

So it goes, seventeen mothers answering typically for all 160 children. Most of them luckily could reply favorably to my questions. Such whole hearted and eager cooperation with the family doctor from intelligent parents interested in the welfare of their children is one of the pleasantest features of a doctor's practice. More of it would surely bring children greater security from diseases which they need not have if only some one will take the necessary trouble. Clearly, these results from only one of the newer preventive procedures show what can be accomplished through proper cooperation. Parents should see to it that their children receive the benefits of up to date medicine.

Are Doctors People?

(Continued from page 23)

One looks at the deserted mills, the deserted farms, then hears some one say, "Most of the people have left, but you'd think some doctor would come." Are doctors people?

Years ago I was on a committee that attempted to study the distribution of doctors, especially in rural communities. We tried to collect cases of hardship, lack of care and forced neglect, but could find only one such case. The complainant was a farmer who testified that on such and such a day he tried to get a doctor to come to see his wife but the doctor would not come. It was in the winter and in the night. His wife had been sick for a couple of weeks but was in "great pain." Somehow or other she got over her illness, but it was terrible, and we were told, "Doctors ought not to be allowed to get away with things like that." So we got hold of Doctor Blank. He knew this farmer and occasionally treated him or some member of his family. He had a general idea of where the farmer lived. He was at first rather puzzled by the tale, but finally said:

"This is the story: It was midwinter and snow was falling. I had just gotten in from a confinement case. After a telephone argument over how sick the wife was, I finally said I'd come, and that I would follow the snow-plow on its next trip to such and such a corner, where the farmer would meet me with a horse and sleigh. That was a common arrangement. However, the farmer said, 'Go out on a night like this? I wouldn't send a dog out!' Whereupon I hung up."

Subsequently, the farmer verified the complete story, adding that he was tired. To the remark that the doctor might have been tired too, he merely replied, "Oh, they get used to it, and if they can't, they ought to do something else."

There seems to me to be much too much talk that a doctor is demanded here or there, on this mountain or at this village corner. If doctors were turned out on assembly lines in mass production, it might make sense to talk of so many here and so many there. Of course, the product would be mechanized. What is wanted are good doctors, skilled doctors, not by any means always specialists, but "regular" doctors.

Doctors are human beings—notwithstanding the fact they are not supposed to be tired, to have vacations or to enjoy uninterrupted dinners or golf games. For months, on the front pages of most daily newspapers, there appeared statements of how soon the draft would begin to take fathers. Senators and representatives in Congress announced that they would fight—in Washington, D. C., not in uniform—the drafting of fathers to the last ditch. But doctors' wives have seen their husbands volunteer, even before Pearl Harbor, and leave their homes and children. Many of them have been over 38 and even over 45. But doctors were not supposed to object. Since the good women are also human, they sometimes object, but the doctor goes. When the war is over, he will not come back to that salary and that pension, but will be obliged to build up his practice all over again in a world that believes that it created doctors in a certain pattern and therefore can destroy them.

After the war, history will tell of its great medical discoveries.

Plasma and penicillin will be cited. There cannot be found a better illustration of lay domination of medicine. In 1928, Professor Alexander Fleming of London made the observation that germs would not grow with or close to the colony of a common mold. Doubtless other men had observed the same thing, but Fleming puzzled over it and finally published this observation. Years went by and nothing happened. Fleming once showed this phenomenon to me, as he did to many others. Certainly something ought to have been done about it. It was only the threat of war and war itself that furnished the impetus that has produced penicillin. The number of millions of dollars poured into the development of penicillin is unbelievable. It is a new agent in combating infections. It may be that we shall be disappointed in the final place of penicillin, but its present promise dazzles the imagination. And yet without the war no man can ever know whether or not penicillin would have been developed or how many years it would have taken to develop it. Once again, I must point out that the doctors are not the masters of medicine or medical practice, even today.

It has been to the everlasting credit of the medical profession of this country that traditionally doctors do not patent their discoveries. Curiously enough, though, some medical schools have sought to profit—and some of them have done so mightily—by taking over patents and the royalties therefrom. The story is told of the opening of one new medical school in about 1905. A famous banker had been a generous benefactor, but universities are always grasping. The university's star fund-raiser took the banker around. The beauties of the buildings were appropriately described. The young scientists were likewise duly noted. "Alas!" said the fund-raiser, "If only we had a little more money to put these trained young men to work." "Humph!" said the banker, "If you have the space and the bright young men, why don't you have one of them invent a good patent medicine? That gives bigger returns than anything I know."

As I have tried to point out, the lay domination of medicine has been going on since the beginning of time. The medical profession has at times approached independence, but it has never been free—certainly not in the way that the profession of law has been independent and free, and master of itself.

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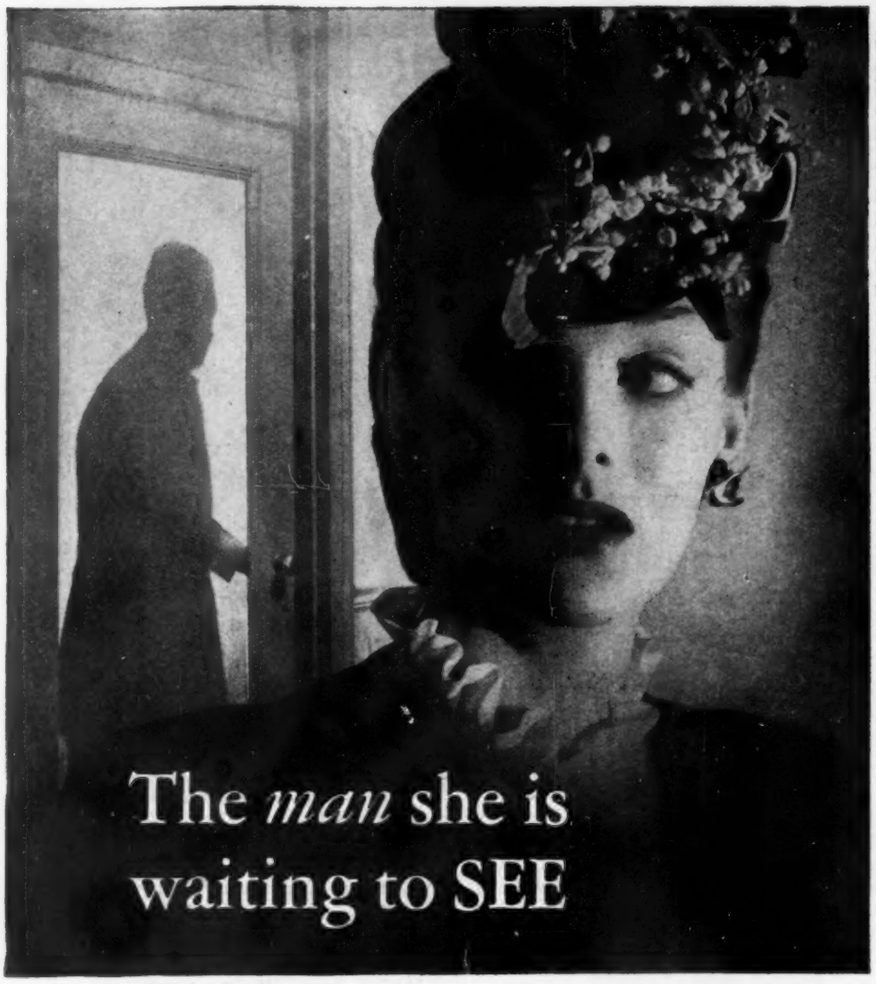

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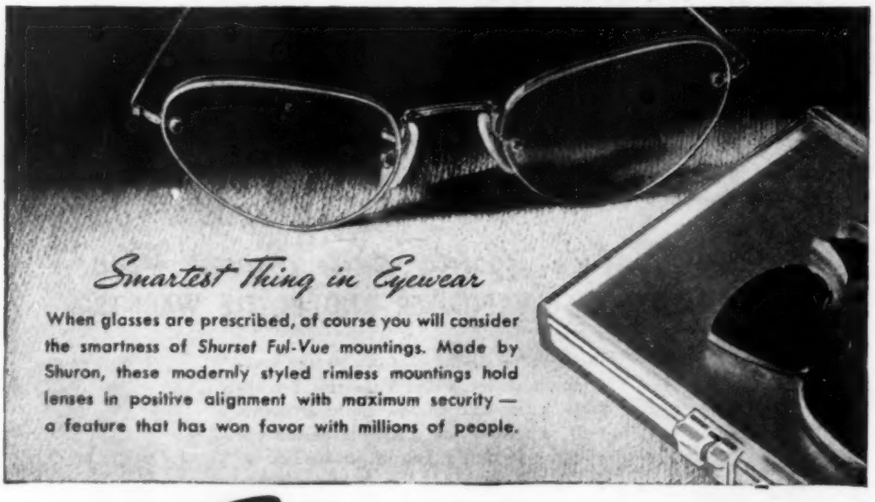
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trend, not new but for the first time really powerful, that represents a new social philosophy. It came into full flower when social sciences were reorganized as a separate sector of human experience and human knowledge. The enthusiasts of this school of thought lump all the human miseries together. Whereas the doctor looks at his patient through a microscope, the social scientists look at illness through a telescope. Perhaps Sir William Beveridge can be regarded as one of the most articulate, most logical and most reasonable of the exponents of this new social philosophy. He has five giants that must be overcome on the way to "reconstruction," as he calls it. These giants are Disease, Idleness, Ignorance, Squalor and Want. There are other thinkers, perhaps on the outskirts of this philosophic trend, who would mention Superstition, Prejudice, Selfishness and Greed. Within the fold of this cult, however, poverty is the mother of disease. The paternity of disease is usually left obscure. These social scientists would therefore take over disease—the study of disease, the prevention of disease and the treatment of disease—and make themselves masters of medicine and the medical profession.

Some years ago I found Professor George Foot Moore, perhaps then Harvard's greatest scholar, in something that in any one other than a professor and an ordained minister would be called a rage. He had been examining students for the degree of doctor of philosophy. A colleague gave the student a somewhat lengthy case history, which Professor Moore said was the story of a bum, a very ordinary bum. The student candidate was asked for his social diagnosis. When the student answered, "Frustrated childhood in an environment of poverty," Professor Moore exploded. Doubtless there are frustrations, doubtless there is poverty. But I agree with Professor Moore that there are also probably bums and with Prime Minister Winston Churchill that there are also pub crawlers.

In any event, the social scientists would put disease and the medical profession within the Social Security Act, with a social scientist in the Cabinet. The problem is regarded as economic, but, curiously enough, what they want to toss at this hungry, poverty stricken and diseased wretch is medical service. Now, most doctors would like, so far as possible, to separate the economic and medical aspects. So far as I know, no substantial group of doctors is opposed to the

control and relief of poverty, unemployment and the distress of old age, and in the control and relief of poverty doctors would include shelter, warmth, food and the like. And certainly doctors want to have not just a better but the best distribution of medical care. To the doctor, human beings are living entities, not case numbers on a blueprint. Likewise a doctor is a human entity. He is no blue-headed pin to be stuck on a map to take care of so many red-headed pins representing patients.

We all know that in some respects mechanized medicine will work fairly well. You can take the urine of a woman down to the laboratory, and some little laboratory animal will whisper to you whether the woman is pregnant or not. But the mechanization of medicine can be carried too far, and it will be if this present trend continues. Doctors seem always to have been dominated by others and never to have been complete masters of themselves and of their profession. It seems that this present trend of social, economic and political philosophy threatens them with more dominance than they have ever known.

As a class, the doctors have not wanted to run the rest of the world. The late President Lowell of Harvard said with regret that the doctor was too busy and too occupied by keeping abreast of the extraordinary medical advances to participate as he should in public affairs, and that the public was greatly the loser thereby. Nevertheless, the public has always wanted its doctors "straight." The public looked down its nose, and still does, at literary doctors or artistic doctors. And the doctor has shown that he is human and like other folks when he indulges in literature, art or music—usually almost secretly.

But this is not a clarion call for the doctor to dominate the world. He knows people too well and himself too well. In his more robust and more individualistic moments, the doctor would like to be more master of his fate and his destiny. In these days of so many words written and spoken about freedom and security, he would like a bit of that freedom in his work. And as for security, his experience makes him skeptical. He has seen diseases vanish and new diseases appear. He has seen trusted remedies become obsolete; he has seen the strong die and the weak get well; he has seen the rich become poor and the poor become rich. He knows that the world is a better and more healthful place in which to live than it was.

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(Continued from page 29)

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During the twenties, the United States Army Air Corps, in an attempt to solve the cause of fliers' headaches and eyestrain, investigated the possibility of using the glass in flying. Tests under actual flight conditions proved that for high, continuous flying, the glass cut glare and provided eye comfort never before experienced.

It was also noted that in field reconnaisance, observation and piloting, the glass did not distort color values—an important point, since the detection of false color and camouflaged foliage is necessary for successful military aerial operations. On the basis of these findings the Army Air Corps immediately set up the new glass as a standard for aviation goggle lenses.

Its scientific protective values now firmly recognized, the glass was later adapted to the manufacture of sun glasses for motoring, boating, beach wear and, in fact, all outdoor sports where glare protection is necessary. Interestingly, movie stars began wearing the green-lensed sun glasses for various reasons—to disguise themselves in a crowd, to enhance their glamor, and, far more important, to rest their eyes after a session beneath glaring klieg lights.

However, people with defective vision complained that they could not see through such sun glasses because the lenses lacked corrective powers. The challenge was immediately accepted. After considerable experimentation an absorptive glass was produced that could be ground to prescribed curves to correct poor eyesight. Bifocals (glasses for near and distant vision) were particularly difficult to make because the glass crystallized in the manufacturing process. But finally the problem was solved.

The invisible ultra-violet and infra-red rays absorbed by the glass, it should be added, are of no value to the physiologic functioning and visual efficiency of the eye. When these rays are abundant, however, they may be dangerous, as in the case of electric arc welding. In many outdoor activities, where excessive glare is present, lenses absorbing the invisible rays and at least 30 per cent of the visible light are recommended for true eye protection.

The current war brought the glass into sharp demand. Millions of sun goggles and glasses fitted with absorptive lenses have been supplied to the armed forces, both aerial and ground. And the manufacture of millions of welding goggles and helmets has made it possible for our soldiers of production to turn out enormous quantities of welded battle equipment with a minimum of eyestrain. An additional factor of safety is provided because the glass can be toughened by a special treatment to resist the impact of flying particles often encountered in industrial operations.

The secret behind the magical light-absorbing properties of the glass is its chemical composition. Here's Dr. Tillyer's explanation: "Certain familiar metals such as iron, chromium, nickel or cobalt, when dissolved in a colorless glass, endow it with the property of selectively absorbing light radiations in the ultra-violet, visible, or adjacent infra-red portions of the spectrum.

"The resulting glass is analogous in performance to a radio receiving set, in that the metal composition of the glass enables it to tune in light radiations of wave lengths known to be necessary for sight while excluding others which may be harmful to the eyes. Briefly, a complex physical change takes place that transforms the undesired light energy into heat. The balance of the light passes on through the glass into the eyes."

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As in all great discoveries, new facts about these materials are constantly emerging. The final word about absorptive glass has not been said. Several types designed for different purposes have been discovered to date. But this one fact alone shows how glass has been improved: The most efficient glass of twenty-five years ago absorbed only 75 per cent of the infra-red rays. Today a glass of the same density absorbs 99.99 per cent of these rays!

At this moment glass scientists are busily at work attempting to develop new and improved types of absorptive glass. One of the major objectives is a colorless glass that will absorb the invisible rays. "I haven't licked that problem yet," states Dr. Tillyer, "but some day I hope to." And when that day comes, another great milestone in optical history will have been passed.

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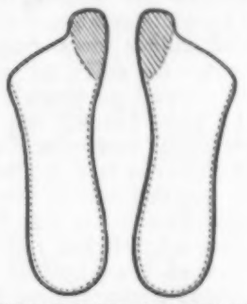

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Infantile Paralysis

(Continued from page 25)

this striving for accomplishment and the possible accompanying distortion of values may retard the adjustment. As early as possible, the handicapped person should be taught to view himself objectively and recognize that since certain physical prowess is not attainable, he must acquire other, compensatory skills. In other words, he must not deceive himself but rather face the reality of his physical defect. When this is accomplished he will make faster progress in achievement, will feel more secure and will more quickly attain social recognition. His position among his associates may not become one of leadership, but such qualities as poise, self assurance and dexterity will lead to the respect of his fellows. Then he will not be judged wrongly because of evident deformities or lack of prowess in some lines.

Good mental hygiene and a proper mental attitude are essential factors to be judged in determining the degree of adjustment made by the physically handicapped person. A sense of security is prerequisite to good mental hygiene. A sense of victory, recognition in striving toward a goal, a plan of life and freedom to pursue it are required by all. The adolescent victim of infantile paralysis is often overwhelmed by the sense of loss and insecurity which is likely to bring out any latent tendencies to maladjustment.

Many of the young cripples interviewed during our study felt inferior in physical form or appearance, although they seldom acknowledged this directly. Some who had made good adjustments would state: "Outer appearances don't mean much," or "We are judged from the chin up." Such remarks were seldom made by those who practiced self deceit in connection with their handicap.

To assist the handicapped person in overcoming feelings of inferiority arising from lack of educational advantages, or from social and economic lacks, requires great patience, sympathy and understanding. Aiding a person to make a realistic evaluation of himself without evasion in the presence of bad environmental influences is a real task.

It was found that severe physical involvements were greater in the unmarried group than the married —68 per cent in the former to 48 per cent in the latter. At certain ages the physical ideal seemed more important for women than men, the intensity of the feeling being somewhat dependent on physiologic and chronologic age. During adolescence and courtship it assumed greater importance. Many cripples refuse to admit a defect and try in every way to hide it. If the physical ideal set is not too exacting it admits minor imperfections. However, if the defect is not truly accepted and fear of detection of it remains, the patient's mental adjustment is not much improved. When the crippled person has lost self-consciousness and realizes that appearances mean little and personal adjustment much, he is well on the way to favorable character adjustment. Those who are forced to use crutches, braces or wheel chairs cannot hide these aids and consequently are likely to take an objective view of the matter. But those with moderate physical faults, such as slight atrophy in a leg, for example, often avoid making an objective adjustment and become self-conscious, easily hurt, aggressive or pessimistic; sometimes they even show nervous fears or instability. Some physically handicapped women have a fear of being watched and hate to enter and especially to leave a room. When they turn their backs, walking away from a group, they are most fearful of being watched.

The handicapped person must also guard against conceit because of skill acquired as a compensation for physical loss. One instance of failure of personality integration was noted in a girl who practiced assiduously on the piano while her schoolmates played. She had increased her self evaluation, but the basic problem of self evaluation in relation to the physical imperfection had been avoided, and she still had marked inferiority feelings regarding her body.

A number of young women in their middle twenties had only moderate handicaps but blamed their lack of opportunity for marriage on minor physical impairments. They were self-conscious, sensitive, critical and bitter. They actually refused to face reality and accept their disabilities, so that the probable real barrier to their marriage was bad personality. Many others much more handicapped, some even in wheel chairs, were happily married, probably due to having been guided properly into correct valuations of themselves. Some deceived themselves by thinking that marriage would end all their troubles. Flight from reality only decreased their sense of self sufficiency and inner security.

Social and economic security has not been the lot of the patients this study covered. Many of the young women desired marriage for purposes of security. Failure was difficult to reconcile. Significant were the comments made by some:

"I am Jewish and haven't much chance of getting married as Jewish boys have an ideal of physical perfection."

"If he doesn't ask me out again it's because he knows there's something wrong with me and has noticed my limp."

"I was all right until my boy friend's folks said I had no business to marry and that I ought to be put in an institution. Now I'm terribly self-conscious."

"I never knew my parents. I never had any home life. All I want is a home, and no man would marry me."

In the study, 117 handicapped married patients were compared with 123 who had had no opportunity for marriage. Of the married group 41 per cent were men, and in the unmarried group 42 per cent were men. It seemed reasonable to compare these two groups on such items as physical attributes, mentality, educational achievement, social life and various mental atti-

Comparison of Married and Unmarried Groups in Regard to Average Weekly Income

Weekly Income	Married, per cent	Unmarried, per cent
$ 0- 4	none	1.7
5- 7	none	5.3
8-10	none	10.5
11-13	2.2	14.0
14-16	4.4	10.6
17-19	6.6	8.8
20-22	10.9	19.3
23-25	15.1	7.0
26-28	8.6	7.0
29-31	2.2	3.5
32-35	10.9	3.5
36 and more	39.1	8.8

tudes. The following facts were noted:

Physical attributes: Fifty-four per cent of the unmarried patients rated very apparent deformity as against 34 per cent of the married, although many who had very severe impairment were married.

Education: In the unmarried group, 67 per cent had some high school education, 56 per cent having graduated; of the married, 72 per cent had attended high school, with 50 per cent graduating. Among those with a college education, 25 per cent were unmarried as against 21 per cent married. In comparing intelligence ratings no special differences were noted. More of the married than the unmarried took advantage of continuation schools; apparently, family responsibilities created more incentive. It was found, also, that 36 per cent of the unmarried as against only 5 per cent of the married patients were unemployed. The earning capacity was found to be greater in the married group.

Examination of the occupational classifications of the two groups showed a slightly larger number of married persons in higher types—that is, skilled labor, sales, professional and semi-professional occupations. The fact that those in the married group had had longer experience in working was felt to account for this difference.

In examining 117 married and 123 unmarried patients an indication of increasing self consciousness was found among the women as they grew older. More than two thirds of those indicating such self consciousness were women. Several of the married women confessed to an increasing sense of concern and embarrassment about minor defects and spoke of a desire to withdraw from social activities. In comparing themselves with other men's wives they felt less attractive and thus insecure.

In comparing the attitudes of married and unmarried patients toward the future it was found that the former were definitely more enthusiastic and optimistic. Fear of future insecurity was predominant in both groups, but the unmarried worried about getting a job and the married were concerned with making sufficient money.

Seventy per cent of the married patients reported a satisfactory or completely normal social life, while 11 per cent of the unmarried reported no social life and only 40 per cent spoke of a satisfactory or normal social life. The paucity of leisure time activities was noteworthy in both groups. Comparison as to hobbies, sports, club activities and reading found little difference between the groups. In the final analysis, the physical deformity was the only factor that distinguished this group from any other young people of similar social and economic status. Marriageability was not found to be dependent directly on the amount or degree of the handicap, yet any improvement in physical condition, social or economic status was of advantage as it provided greater security.

Improvements in self-evolution, personality and social adjustments are highly desirable goals for these handicapped people, the study clearly indicates. Possibly this is the only sound solution, whether the end be marriage, security, freedom from self consciousness or general happiness.

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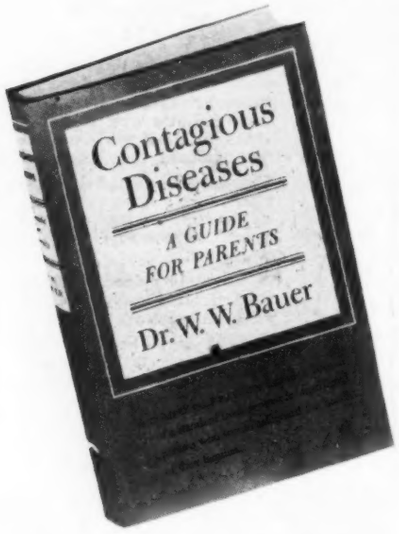

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NEW BOOKS

Building Sex into Your Life

By Paul Popenoe, Sc.D. Paper. Price, 25 cents. Pp. 25. Los Angeles: The American Institute of Family Relations, 1944.

This is a sensible, sane and forthright statement of the place of sex in living. It begins with a description of the love life of the infant and its evolution and transformation into the love life of the child, the adolescent and the adult, with due consideration for those individuals whose growth other than physical is arrested at these various levels. It should be very useful to teachers charged with responsibility for teaching about sex. Physicians may recommend it with confidence to patients who have a modern outlook. It may be a trifle strong for the Victorian-minded, and yet this should not be interpreted to mean that it is in any sense lacking in appreciation of moral values as commonly understood. In fact, it stresses these values in the modern sense.

W. W. BAUER, M.D.

Notes on Nursing by a Nurse

By Sarah Corry, R.N. Cloth. Price, $1.50. Pp. 144. New York: D. Appleton-Century Company, 1944.

These notes are not only up to date but are concise and practical as well. In addition they have a human quality that is uncommon in a book of this type.

The author does not relate her own nursing experience; however, its depth and breadth are illustrated in two ways: first, by the substitutes which are suggested when the customary article is not available; and second, by the way in which directions are amplified.

This little volume should find a place in the kit of the nurse who travels from place to place as well as on the desk of the nurse who is stationary. An index adds to its usefulness.

ADA BELLE MCCLEERY.

Health Counseling for Girls

By Margaret L. Leonard, Ed. D. Cloth. Price, $1.50. Pp. 131. New York: A. S. Barnes and Company, Inc., 1944.

Written to explain how personal guidance in health education operates in the high school, this well written, easily read book would be useful for the thoughtful parent as well as for high school teachers and administrators. The tie-up of physical health with emotions, habits, family life and friendliness is seen to be a two way proposition, and ways and means of getting the high school girl to help herself to make

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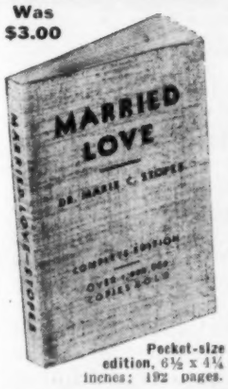

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Nearly half the book is made up of well selected cases, with problems ranging from mild to severe. The handling of resistance to following a suitable health regime or getting needed medical attention is likely to suggest methods of handling similar situations in the home. The procedures followed in helping girls to feel more secure emotionally and to take the hard first steps in improving their relationships with other girls and with boys are of practical value.

The fitting of such broadly interpreted health counseling into the large high school system is given in detail as it has been carried on over a period of time in one school. Parents who realize the importance of the adolescent years in the adult's history of health and fertility will want to use their influence to get a similar health educator who can do individual counseling in this important area added to their school system or county health department.

The author speaks of ways in which those teachers or other adults who are interested might prepare themselves for the modern profession of health education but does not mention the centers recently specializing in providing this training at the University of Michigan, Yale University and the University of North Carolina.

GLADYS HOAGLAND GROVES.

Young Offenders

An Enquiry into Juvenile Delinquency, by A. M. Carr-Saunders, Hermann Mannheim, and E. C. Rhodes. Cloth. Price, $1.75. Pp. 168. New York: The Macmillan Company, 1944.

In this book is set forth the report of an inquiry instituted by the British Home Office to ascertain the relationship to juvenile delinquency of parents, homes, environment and similar factors. Two thousand cases constitute the basis for the report and, as might be expected, the broken home, the neglected child and the unfavorable social situation are all found to run parallel with juvenile delinquency. To what extent one can generalize from this parallelism and assign causes is no more clear from this report than from preceding ones. It is definitely certain, however, from the relationships shown between juvenile delinquency on the one hand and on the other hand poor health, unsatisfactory home situations and other unfavorable situations that these latter conditions should, whenever possible, be remedied as a necessary approach to the attack on juvenile delinquency.

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HEALTH IN THE HEADLINES

MIGRAINE or sick headaches occur in women who are tense, quick and eager by temperament—women who usually want things done right, and right now. They are peculiarly sensitive to light, sound and smell; they tire quickly and are apt to go to pieces under strain or excitement. Because the headaches are commonly accompanied by nausea, vomiting or abdominal pain, many sufferers —and sometimes their doctors, too —are deceived into thinking the disorder is gastric. Thus recognition of the temperamental type is an aid in diagnosis, according to Dr. Walter C. Alvarez of the Mayo Clinic. Typical symptoms include "blind spots," throbbing headache, nausea and prostration. These may be either slight or severe; the attack may last only a few hours or it may last several days.

Administered early enough, drugs often bring relief or diminish the severity of an attack. Usually, however, Dr. Alvarez believes that what the patient needs most is neither drugs nor diet nor an operation but information on how to live calmly and peacefully, so that her brain won't get "on edge."

* * *

ALCOHOLISM won't be reduced much until more people realize that it is a medical rather than a police problem, Dr. Lawrence Kolb of the United States Public Health Service said in a recent address sponsored by Alcoholics Anonymous, voluntary self-help organization for drinkers. Alcohol is fourth in the list of reasons people are sent to mental hospitals, Dr. Kolb pointed out, and it is rapidly becoming one of the major causes of death in the United States. Yet, because of the frequent alcoholic origin of violent crimes, people insist on thinking of this problem as a matter for police, jurisdiction. Suggested remedy: medical research looking toward better methods of prevention and cure; educational work aimed at recognition of alcoholism as a medical problem.

* * *

BABY talk which persists beyond the age at which most children articulate properly can usually be corrected through simple speech drill, *The Journal* of the American Medical Association says in answer to an inquiry. The defective sounds should be isolated and pronounced alone until the child can manage them; then they can be incorporated into simple sound combinations and, finally, into familiar words and phrases. Many normal children are slow to learn the language skills, *The Journal* says. Sight plays an important role in learning speech, it is pointed out. The child first learns sounds whose essential movements can easily be seen and imitated, such as p, b, m and w. Last to be learned are those made farther back in the mouth: r, k, g, ng. This simple fact accounts for many of the usual sound transpositions in baby talk, such as "wed" for "red," "dween" for "green" and so on.

* * *

ADVERTISEMENTS urging the reader or hearer to take vitamin pills to cure fatigue, weakness, lack of pep or "that run down feeling" are again revealed as false and misleading, this time in a study made at the Lahey Clinic in Boston. Doctors there investigated 300 cases in which the principal complaint was exhaustion, weakness, loss of ambition or low vitality. Only in a negligible number of cases was vitamin deficiency found to be a contributing cause. Nervous disorders of one kind or another were discovered to be the most frequent cause. Others: chronic infection, diabetes, heart disease, blood diseases.

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CASTING AROUND for a definition of the intangible entity generally described as "personality," Dr. George Draper of Columbia University says: "Every one is aware that even the most lowly forms project on our consciousness an unmistakable flavor of identity. Concerning his own species, man usually speaks of this projection as the impact of personality. Because it imponderably leaps the space between its origin and the observer, we usually designate this force as a psychologic phenomenon."

But Dr. Draper isn't wholly satisfied that personality is all psychologic. His argument: "The direct physical impact of fistic blows, for example, from Joe Louis, General Tom Thumb and Einstein likewise possess easily distinguishable personal qualities."

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MEDICAL science lost another round to the common cold recently when *The Journal* of the American Medical Association published a report indicating that so-called "cold vaccines" are valueless. Evidence of the value of any of the widely advertised vaccines is lacking, the report says. "These preventives do not serve any recognizable purpose other than to lighten the public purse," *The Journal* concludes indignantly.

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ONE brick of pressed, dehydrated beets can be reconstituted into servings for as many as thirty-four people, nutrition authorities report. Carrot and sweet potato bricks will serve about the same

number, while a brick of compressed cranberries will unfold into a miraculous one hundred servings —clearly the winner.

To make bricks, dehydrated foods are subjected to sustained pressures up to 56,000 pounds per square inch. The amount and duration of the pressure and the temperature of the food before and during compression are varied as investigators seek the ideal combination of conditions for processing each food. The object, of course, is to make the smallest possible brick, for greatest economy of shipping space and weight, without sacrificing the original taste and nutritional quality of the food.

This work is being carried on at the Agricultural Engineering Laboratory of the Bureau of Plant Industry, Soils and Agricultural Engineering of the Agricultural Research Administration of the United States Department of Agriculture, with the cooperation of the Bureau of Human Nutrition and Home Economics, or, dehydrated, the AEL of the BPISAE of the ARA of the USDA, with the BHNHE.

—R. M. CUNNINGHAM JR.